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ABSTRACT

The literature on the training provided by small and medium-sized enterprises (SMEs) in Great Britain was reviewed to determine the extent and quality of training available and the link between training provision and small business performance. Smaller firms were less likely to offer training, and the training they did provide was generally inferior to that provided by large firms. The relative reluctance of small firms to provide training was attributed more to supply and demand factors than to small firm owners' ignorance of the benefits of training. No well-conducted research was found showing that provision of training by SMEs enhanced subsequent performance by the firm providing the training. Studies of individuals exiting from training courses generally reported high levels of trainee satisfaction. Policymakers were cautioned to avoid statements implying that training has a clear "bottom line" impact when attempting to encourage SMEs to offer training, and they were advised that increasing the quantity of trained labor in the economy may require a larger financial contribution from employees, who are the primary beneficiaries of training. (The bibliography contains 168 references. Appended are tables detailing the methodologies and findings of 37 studies of training in SMEs.) (MN)

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Training Provision and the Development of Small and Medium-Sized Enterprises

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Department for Education and Employment

Research Report
No 26

Training Provision and the Development of Small and Medium-Sized Enterprises

A Research Report produced by Paul Westhead and David J Storey,
Centre for Small and Medium Sized Enterprises, University of Warwick

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Finally, we would like to record our gratitude to all the researchers who have published work on training provision and the development of small and medium-sized enterprises. We hope this review stimulates their efforts to conduct further research in this area.

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July 1997

EXECUTIVE SUMMARY

Background to this Review

Virtually unanimous support exists for the concept that an educated and trained workforce is a key element in the competitiveness of both individual businesses and of economies as a whole. If a substantial number of firms are not providing training for their employees then, in principle, this is an area of concern for Government. This research provides a literature review of the factors influencing training provision by small firms and the impact training provision has on firm performance. The key findings are presented below.

Provision of Training by Employers

A manager or an employee is less likely to be in receipt of training (particularly, job-related formal training) if he or she works in a small, rather than a large, firm.

This finding, however, has to be contextualised. Training in a large firm is likely to be fundamentally different from training in a small firm. In a large firm the trainee is much more likely to participate on external courses, which are more likely to be validated and to lead to formal qualifications. Training provision in small firms is frequently much less formal, and characterised by an informal imparting or conveying of work skills or knowledge from one employee to another. It is often suggested, although not empirically confirmed, that the latter are of greater value to the small firm than the former, and so defining training to include formal training alone is likely to lead to an underestimation of the total amount of training provided in small firms.

Even so, we believe it to be the case that the small firm manager / worker is less likely to be trained than their counterpart employed in a large firm.

Quality of the Training Provided

Whilst the take-up of training may vary by firm size, a key issue is the quality of any training provided. It is, however, very difficult to measure the quality of training provided by firms. **In our judgement, there is no obvious reason why the quality of training provided in small firms should be inferior to the training provided in large firms**. There is no conclusive evidence which suggests the quality of training provided by large firms is better or worse than that provided by smaller firms.

Why Do Small Firms Provide Less Job-Related Formal Training Than Large Firms?

Two explanations are presented for the lower provision of job-related formal training in small rather than large firms: the 'ignorance' explanation and the 'market forces' explanation.

The **'ignorance' explanation** implies small firms are less likely to provide job-related formal training for their employees because the business owners / managers are unaware of the full benefits of training for several reasons. Some small firm owners have a feeling of antipathy towards educational institutions which provide training. Surveys have shown that about one third of new firms are established by individuals who do not hold any formal educational

qualifications. Such small firm owners are often opposed to what they view as formalised learning, which they associate with school.

If small firms are 'ignorant' of the full benefits of training then, in principle, there may be a market failure, possibly justifying Government intervention through the provision of subsidies. Government can cut the costs small firms have to pay for training packages through the provision of direct or indirect subsidies to firms which provide job-related formal training. This leads initially to a once-off increased take-up of formal training by small firms. It is assumed, once small firms have experienced the benefits associated with providing job-related formal training, they will be more prepared to continue providing training without any form of subsidy. Furthermore, the increased provision of training by small firms will benefit the national economy and this subsidised investment is justified because tax payers will directly (or indirectly) benefit from increased economic activity.

The **'market forces' explanation** argues small firms are less likely to provide training for their employees, due to a variety of supply and demand factors, without any assumption of 'ignorance' on the part of the small firm owner.

There are a number of reasons why small firms are markedly less likely to provide training for their employees. First, owners of small firms are overwhelmingly concerned with short-term survival issues, whereas many training benefits are long-term; second, the high probability that trainees in small firms will be poached by other (large) employers; third, the absence of internal labour markets in small firms; and for managers, promotion (certainly to the top position within the business) is less likely in small firms where this post is likely to be occupied by the owner.

There are also powerful reasons why the cost of supplying training to small firms by external training providers is higher per unit than for large firms. Tailoring training packages to the specific needs of individual small firms adds substantially to unit costs. In addition, it is more difficult to provide a course when the trainees come from a variety of different small firms (particularly when they and their businesses are at different stages in development), compared with the provision of a standard training package, to middle managers in a large firm, all of whom are at a similar stage in their careers.

We believe the 'market forces' explanation is a more plausible explanation for the markedly lower provision of formal job-related training by small firms than the 'ignorance' explanation. If this is the case, then public subsidies for job-related formal training in small firms, justified on the 'ignorance' argument, require careful scrutiny.

Training Provision and Small Business Performance

We were unable to provide evidence of well conducted research, which showed the provision of training by small and medium-sized enterprises (SMEs) clearly led to (or is even associated with) enhanced subsequent performance by the firm providing the training. The 'hard' measures of performance which we focused upon related to firm survival / non-survival and changes in sales / profits.

A number of studies conducted in the United Kingdom have, however, claimed to have identified a link between training provision and small firm performance, but these results are questionable for several reasons. A number of highly publicised studies have serious

methodological flaws which we document. Of these, the most serious has been the failure to use 'control groups'. In other studies, where these have been used, the 'controls' are inappropriate. **Probably the most infamous, is one study which claimed that small firms in receipt of training were three times less likely to fail. We emphasise this has no statistical validity whatsoever**. Nevertheless, it has received extensive media coverage and has been widely quoted.

On the other hand, several studies in the United Kingdom have failed to find a clear link between small firm training provision and enhanced subsequent firm performance. These studies have received almost no media coverage.

Whilst there is no conclusive evidence linking training provision and enhanced subsequent small firm performance, small firms which participated on training courses clearly liked the training products they had purchased. **Studies of those exiting from training courses - owners, managers and employees - generally report high levels of trainee satisfaction**. Further, after the training programme, the vast majority of trainees suggest they experienced strongly heightened awareness and confidence due to the training programme.

Implications for Researchers

Researchers need to conduct careful studies of the impact of training on small firms over the long term (i.e., greater than three years). Researchers have a duty to point to methodological weaknesses in previous studies and address these issues. It would be valuable to track the performance of large numbers of small firms which have provided training against a comparable 'control' group of firms which have not provided training for their employees. It is also necessary to obtain better indicators of the 'quality' of training provided by small firms.

Implications for Policy-Makers

Policy-makers need to recognise that the presumed positive impact of training upon SME performance remains unproved; **it is important, therefore, to avoid in promotional literature statements which imply that there is a clear 'bottom line' impact of training.**

Our personal opinion is that some, but clearly not all, forms of training are weakly positively associated with enhanced small firm performance. However, the benefits of training are much clearer both to trainees and to the economy as a whole. Nevertheless, under current arrangements, however, it is the firm (i.e., the private sector) which both sets the agenda for training provision and also has to pay a substantial, but not the whole, cost of training provision. The major policy challenge is to construct an incentive system which increases the number of small firms providing various types of job-related formal training (which is generally perceived to be in the national interest), whilst recognising that it is not always in the short-term private interest of the small firm to provide training.

Policy-makers and external training providers must recognise that there is a simple 'market forces' explanation for the lower provision of training by small rather than large firms. **To increase the quantity of trained labour in the economy may require a larger financial contribution from employees who appear to be main direct beneficiaries from training.** However, the problem is that this may put at risk their participation on training programmes.

1. INTRODUCTION

In many countries there has been a gradual reduction in the number of mass-production jobs with increasing job complexity and skill requirements now being characteristic of all employees (*Buechtemann and Soloff, 1994*). Further, there is a concern that a failure by employers to provide training for their employees may exacerbate the growing skill shortages problem (*Hart and Shipman, 1990; Haskel and Martin, 1993a, 1993b*). Policy-makers are aware that recruitment difficulties and skill *shortages may reduce the competitiveness of small and large firms (Campbell* and Baldwin, 1993). To move from a low skill equilibrium (*Finegold and Soskice, 1988*), policy-makers are aware that:

> "Major investments in human capital, both in the form of education and workforce training and in the form of research and development activities, appear to be an increasingly indispensable condition for enabling firms to move towards new markets and up-scale market segments that yield higher economic returns than standardised mass-commodity markets..." (*Buechtemann and Soloff, 1994, p.243*).

However, it is also appreciated,

> "There is no single coherent theory of training which explains its existence, the optimal investment in training by the individual and the firm and the potential involvement of government in its provision. A starting point is that training constitutes a form of human capital investment which yields a rate of return via a higher marginal product of training labour (*Becker, 1964*)" (*Dolton, 1993, p.1262*).

To meet changing requirements and market challenges, Governments throughout Europe have introduced a number of policy instruments to encourage the survival and development of small and medium-sized enterprises (SMEs). Further, there has been increasing emphasis by Governments on the importance of training provided by employers to ensure economies have the skilled workers necessary for improving adaptability, competitiveness and economic growth (*OECD, 1995*).

Education and training support is now one of the leading measures to increase the skill level of the workforce (*Blundell et al., 1996*), to ensure stronger long-term national economic performance (*Worswick, 1985; for a dissenting view see Shackleton, 1992*), to reduce labour mobility (*Elias, 1994*), to improve employee motivation (*Heyes and Stuart, 1995*), to improve the internal efficiency of SMEs (*Addison and Siebert, 1994; Department of Trade and Industry, 1996*); to improve business factor productivity (*Steedman and Wagner, 1989; Bishop, 1994*), to improve business performance (*Lynch, 1994*) and to achieve accreditation for BS5750 British quality standard (*Vickerstaff, 1992*).

The benefits associated with trained workforces are appreciated by employers, particularly those with 10 or more employees. Curran et al., (1996) drawing upon a survey of firms in England and Wales with less than 200 workers found that 87.5% of owner-managers reported they saw advantages in training workers. The most frequently cited perceived advantages reported by respondents for providing training were as follows: so people can do their jobs better, increase productivity, add to their skills / knowledge, increase the

range of skills in the business, facilitate business growth and increase workers' commitment.

Training provision by an employer is, however, only one of a range of solutions to resolve skill shortages (*MacDuffie and Kochan, 1995*). Recruitment, changes in payment systems and/or investing in technology to downgrade skill requirements may also resolve an organisations skill shortage problems (*Pettigrew et al., 1989; Johnson and Gubbins, 1992; Osterman, 1995*).

In the United Kingdom, the provision of training to SMEs has become a central issue of economic policy (*Miller and Davenport, 1987*) and is a major indirect small firms policy initiative (*Storey, 1994*). A variety of training strategies have been pursued by employers in Britain, mainland Europe, Japan and the United States and these are summarised in Table 1. The former British Conservative Government preferred a market-based approach to employer-led training provision with little place for direct legislative backing for training (*Dolton, 1993; Keep and Mayhew, 1996*). Nevertheless, over the last decade, the external provision of training and support to SMEs increased considerably, involving national and local Government, the private sector and further and higher education institutes. Responsibility for co-ordinating, as well as providing, external training moved during the 1980s from the Manpower Services Commission to the Training Agency. From October 1989, an even more fundamental change was the decentralisation of the Training Agency's co-ordinating role through the creation of a regional / local network of employer-led Training and Enterprise Councils (TECs) in England and Wales and employer-led Local Enterprise Companies (LECs) in Scotland (*Employment Department, 1992*). The new training system is now controlled by locally based employer-led organisations which decide the nature and volume of training that is required[1].

Marked variations in the incidence of enterprise-related training from country to country was recently demonstrated by Lynch (1994). Table 2 presents rough measures of the percentage of employed workers that had received training from their employer. From the outset, it must be appreciated that comparative research in this area is very difficult because a variety of data sources and training definitions have been used, covering contrasting periods of study. Nevertheless, the evidence presented in Table 2 suggests the incidence of training provision in Great Britain was comparable to that reported in Germany (West) and the United States, but markedly lower than the levels reported in Japan, Australia, Norway and France. For those employers providing some training, Table 3 suggests employers in the United Kingdom, the United States, France, Germany (West) and Australia spent roughly 1.3% or more of their total wage bill on training. We can infer from this evidence, that employers in the United Kingdom generally perceive the provision of training for their managers, as well as other types of employees, will be associated with a variety of benefits for their enterprises.

Research evidence from employer-based studies, however, consistently show that the provision / take-up of training is strongly associated with employer size. Table 4, taken from a recent West Midlands Business Survey shows that, for all types of workers and all three types of training provided, the proportion of employers providing such training increased with firm size. For example, only 10% of firms with 10 or less employees provided external training for skilled workers, compared with 33% of firms with 200 or more employees. The second point, which the table clearly illustrates, is that there are

differences between groups of workers according to the type of training provided. Amongst large employers (with more than 200 employees), 62% of firms reported providing external training. However, only 22% of large firms reported providing on-the-job training and only a further 37% of large firms suggested they had provided external training. Finally, there is evidence, although this is not as striking, that the larger firms were generally more likely to have provided external training and placed less emphasis upon on-the-job training for most groups of workers.

2. OBJECTIVES OF THIS STUDY

This study will review the research literature which has focused on the provision of training by employers and the take-up of training by individuals / employees. We will review studies covering all sizes of firms / employers but will highlight the specific findings / implications for small firms. As appreciated elsewhere (*White, 1994*), the benefits associated with employer provided training must be measured for employers (i.e., training providers) as well as employees (i.e., trainees). The link between training provision and small business performance identified in previous studies will also be discussed.

This review of the research literature is organised as follows:

- Various types of job-related formal training are identified.
- 'Ignorance' and 'market forces' explanations for the uneven provision of job-related formal training are then briefly summarised.
- Factors associated with the provision of training by small firms / employers (for example, the demographic characteristics of organisations, job market conditions and the perception of future recruitment difficulties) are highlighted.
- Factors associated with the take-up of training by individuals / employees are summarised.
- A critique of previous research concerning the provision of training by small firms / employers is presented.
- Previous research on the provision of training by an employer and business performance is summarised.
- A critique of previous research surrounding the relationship between training provision and small business survival and growth is then presented.
- Benefits associated with the take-up of training for individuals / employees are highlighted.
- The final section presents some conclusions and directions for future research.

3. DEFINING JOB-RELATED FORMAL TRAINING

Defining 'training' is a conceptually difficult task (*Campanelli et al., 1994*). A variety of definitions have been presented and used which makes comparative research in this area difficult. Further, training is a difficult concept to quantify because employees can receive training through a variety of methods (*Altonji and Spletzer, 1991; Lynch, 1991, 1992; OECD, 1991; Green, 1993; Veum, 1995, 1996; Curran et al., 1996*).

Various types of training have been identified. Small firms / employers can provide informal in-house training and/or various types of on-the-job job-related formal training as well as off-the-job training. As Table 4 showed, the provision of informal in-house training is the most frequently provided type of training by small firms. A detailed discussion surrounding the informal training issue has been presented (*Hendry et al., 1991b; Vickerstaff, 1992; Goss and Jones, 1992; Johnson and Gubbins, 1992; Abbott, 1993; Nove et al., 1995; Curran et al., 1996*). Johnson and Gubbins (1992, pp.32-33) identified the following three reasons for the dominance of informal, firm-specific and on-the-job approaches to training in small businesses:

> "(i) In most cases this is the most appropriate means of introducing new recruits to the job. 'Learning by doing' is seen as far more valuable than the theoretical approach which is thought to pervade college courses; (ii) Small businesses do not have the resources to develop formalised, general training courses for internal provision. The relatively small number of people involved make it an uneconomical proposition to move towards formal schemes; (iii) External courses are seen as too costly (in cash and time) and/or too general. Given that most businesses have their own 'idiosyncrasies', college courses are unlikely to provide appropriate training".

In the United Kingdom, public subsidies have been targeted towards job-related formal training schemes. Curran et al., (1996, p.4) suggest Government has encouraged small firms to provide training for the following reasons. First, the contribution of the small firm sector to job generation, wealth creation, and the wider performance of the United Kingdom economy is appreciated. Second, due to inherent diseconomies of scale, small firms are often at a considerable disadvantage compared with large firms with regard to the purchase and delivery of formal training. Third, the vast majority of training packages on the market are not customised to the specific needs of small firms. Fourth, without subsidised support, small firms would only provide firm-specific informal training (with a potential lack of transferability which is perceived by policy-makers not to help the economy more generally) and which do not lead to nationally recognised qualifications. Policy-makers are, therefore, particularly interested in the factors which either encourage or impede the provision / take-up of job-related formal training. We, however, acknowledge that policy-maker interest in training is shifting towards a growing recognition of the role and importance of informal training in small firms. For example, the Skills for Small Business Initiative has encouraged small firms to provide informal training which will improve their internal ability to plan and manage training provision within their organisations. Nevertheless, this review will focus upon the factors associated with provision of job-related formal training provided by small firms / employers.

'Ignorance' and 'market forces' explanations have been presented to explain why small firms provide less formal training than large firms (*Storey and Westhead, 1997; Westhead, 1997*). Each of these explanations are discussed in turn in the following section to explain the lower provision of job-related formal training by small firms / employers.

4. WHY DO SMALL FIRMS PROVIDE LESS JOB-RELATED FORMAL TRAINING THAN LARGE FIRMS?

4.1 Introduction

Under certain assumptions, competitive markets can be shown to be efficient in the allocation of goods and services (*Rowley and Peacock, 1975*). Former British Conservative Governments over the 1979 to 1997 period sought to minimise the direct provision of goods and services by the public sector, on the grounds that these were more efficiently provided in the market by private firms. Governments in many other countries have also shifted their culture from an (automatic) public provision of goods and services to a presumption that goods and services should always be provided by the private sector except when there is clear evidence of 'market failure'.

The latter occurs when the assumptions referred to in the paragraph above are significantly violated. These assumptions include (perfect) competition in the product market, (perfectly) informed buyers and sellers, and the absence of public goods and externalities. When these assumptions are violated there is, a priori, some case for considering Government intervention since the market could be viewed as potentially 'failing'. In practice, a second 'test' is also applied which is whether, even when the assumptions are clearly violated, the position is improved following intervention.

In the case under discussion here, the assumptions are violated in several respects. The first is that training generates positive external effects, so that the quantity of training purchased by the business owner following his / her private interests is less than that which is socially optimal. However, since this argument applies to both large and small firms alike, and our purpose is to distinguish between the two, it will not be considered further. A second violation relates to potential imperfections in the capital market. Most notably, small firms may find it more difficult to obtain long-term financial arrangements which would allow them to undertake long-term investments. We recognise this, as a potential imperfection, but the low take-up of Small Firm Training Loans Scheme, which provides subsidised loans to pay for the cost of training provision suggests capital constraints are not the major impediment lowering the take-up of job-related formal training by small firms. The third violation is the extent to which firms can be considered to be 'informed' purchasers - or its mirror image 'ignorance'.

4.2. The 'Ignorance' Explanation

Owners / managers in small firms have a pivotal role in the decision-making processes leading to the provision of job-related formal training (*Matlay, 1996*). The lower provision of job-related formal training by small firms must be partly because owners / managers do not perceive the same need as those in large firms to provide training for their workers. One reason for this which is put forward is that small firm owners underestimate, or are 'ignorant' of, the benefits of training provision. They equate training with 'schooling', which many themselves found an unrewarding experience. This is illustrated by research which shows small businesses are often managed by key decision-makers who do not hold any formal academic qualifications. For example, Cressy and Storey (1995) in their study of new businesses which had accounts with National Westminster Bank found that 37% of business founders had no qualifications. Similarly, Storey and Strange (1992)

in their study of new firm founders in the County of Cleveland in the North East of England noted 35% of founders did not hold any formal educational qualifications. Low educational attainment amongst small business owners is not, of course, uniform. Owners / managers of small knowledge-based and professional services firms, generally have above average levels of education (*Curran et al., 1991*) and this may explain why such firms are more likely to provide training for some of their employees (*Curran et al., 1996*).

The 'ignorance' explanation, therefore, suggests small firms are less likely to provide training for their employees because their owners / managers are ignorant of the benefits from training. To address this 'ignorance' gap, Government has provided direct (and indirect) public subsidies (*Gunderson, 1974*) and has encouraged the provision of training in small firms at low or even zero cost in order to make them aware of the benefits of a trained workforce[2]. As noted earlier, the Department for Education and Employment (DfEE), for example, launched in conjunction with the clearing banks the Small Firms Training Loans Scheme in June 1994, the aim of which is to encourage small firms to obtain loans with deferred repayments to cover the costs associated with the provision of training for their employees. The inference is that, once a business owner / manager has participated on a training programme, he / she will realise that the educational system has changed fundamentally since they were at school. In addition, they will realise the limitations in their own knowledge and will be more prepared to purchase training in future for themselves and their employees. By implication, it is assumed that the small firm owner / manager will be able to identify the contributions the training has made to the enhanced performance of his / her business.

It should be noted that 'ignorance' still exists even where small firm owners are aware of the availability of training schemes (*Fuller et al., 1991; Birley and Westhead, 1992; Abbott, 1993*). The 'ignorance' is in assuming that the training will be inappropriate for their needs, and not necessarily a lack of awareness.

4.3. The 'Market Forces' Explanation

The 'market forces' explanation suggests the lower provision of training by small firms reflects informed (i.e., 'non-ignorant') decision-making by the owners / managers of small firms as well as the suppliers of training. Supply and demand factors leading to the lower provision of training by small firms are illustrated in Figure 1. It shows small firms (D_S) have a demand for training which is lower than that recorded by large firms (D_L). Also, it shows the costs of supplying training to small firms (S_S) are greater than those associated with supplying training to large firms (S_L). Hence, small firms purchase Q_S units of training whilst large firms purchase Q_L units of training.

There are a several reasons why training provision is more costly in small than large firms. First, the heterogeneity of the small firms sector (*Curran et al., 1996*) adds to the unit cost of supplying training to employees of small firms. Providers of training to small firms must contact a large number of individuals and enter into separate and individual negotiations and agreements. In practice, the number of trainees per firm is generally very small (*Vickerstaff, 1992*) but, because small firms usually require customised training courses which are relevant and meet their specific needs (*Kirby, 1990; Fuller et al., 1991; Johnson and Gubbins, 1992; Vickerstaff, 1992; Ram and Sparrow, 1993; Curran et al., 1996; Matlay, 1996; Welch, 1996*), the fixed cost of providing a training course to a small

number of employees is much higher than the fixed cost of providing a standard training package to a large number of employees (*Lynch, 1994*).

Figure 1 also shows the demand for training by small firms is likely to be less than that recorded by large firms. Owners / managers of small firms have short-term strategic horizons and usually focus upon short-term outcomes. The pressure of work in a small firm environment (*Fuller et al., 1991*) as well as the direct cost of training (*Kirby, 1990; Johnson and Gubbins, 1992; Vickerstaff, 1992; Welch, 1996*) can, therefore, prevent an owner / manager releasing his / her employees to attend a training course. Moreover, owners / managers of small firms may be reluctant to release their employees if there is a high opportunity cost attached to their employees attending a training course (*Blackburn and Hankinson, 1989; Kirby, 1990; Attott, 1993; Atkinson and Meager, 1994; Lynch, 1994; Curran et al., 1996; Matlay, 1996*). Such opportunity costs are likely to be higher in smaller rather than larger firms. At the most simplistic level, in a two person firm, the absence of one person on a training course can clearly have a direct impact on firm performance, whereas one person's absence may have a minute impact on a thousand employee firm (*Lynch, 1994; Storey and Westhead, 1997*). Employers may only release their employees to attend off-the-job training courses if the training satisfies industry-wide standards and/or agreed qualifications (for example, those associated with accountancy and transport) (*Johnson and Gubbins, 1992*). Further, Wynarczyk et al., (1993) have suggested the absence of an internal labour market (ILM) in a small firm can impede the provision of management training. Most notably, they found small firm owners expected their manager's next job would be outside his / her small firm. As a result, many small firm owners have comparatively little incentive to provide their managers with additional job-related training.

The provision of job-related training by an employer, as well as the take-up of this training by a recipient employee, is an important investment decision[3]. Both parties weigh the current costs of training against the potential benefits associated with its provision and take-up (*Greenhalgh and Stewart, 1987*)[4, 5]. Employers providing training appreciate that the period of expected return is more uncertain for the employer than the recipient employee.

Owners / managers of small firms appreciate that the providers of the job-related training may not benefit from the training investment (*Fuller et al., 1991; Bishop, 1994; Baldwin et al., 1995; Greenhalgh and Mavrotas, 1996*)[6]. With this in mind, investments in non-portable firm-specific training may be provided by employers rather than investments in general training (*Lynch, 1994*). However, many owners / managers of small firms may not train their employees because they fear that newly trained employees might want more money (*Keep and Mayhew, 1996*). There is also a risk that trained employees will be poached away (*Jones and Goss, 1991*) by other employers which are prepared to pay a remuneration premium to trained employees[7, 8]. Without a subsidy to redress this job mobility externality, many small firms may under-invest in training provision because they are unable to capture the returns associated with their training investment (*Greenhalgh and Mavrotas, 1996*).

Of course, the 'market forces' explanation does not imply that the total quantity of training currently provided in small firms is socially optimal. It merely suggests that public

intervention to increase the take-up and provision of job-related formal training by small firms is difficult to justify based upon the 'ignorance' argument alone. A stronger case for intervention, however, could be made if small firms are particularly deterred from providing training because they fear their trained staff will be 'poached' away by other employers. Even then, however, it would be important to be convinced that, if the objective is to increase the levels of the skills in the economy, the subsidised provision of training by small firms was the most efficient way of delivering such skills.

4.4. Summary

Overall, we believe the 'market forces' explanation is a more credible explanation than the 'ignorance' explanation for the lower provision of training by small rather than large firms. We do not believe that the quantity of training provided by small firms will be increased by the provision of a one-off public subsidy designed to overcome 'ignorance'. Instead, we believe the evidence points to privately rational and informed decisions being made by small firm owners to provide less training than is likely to be delivered by larger firms. We are less clear about whether that provision is socially optimal.

5. PROVISION OF TRAINING: EMPLOYER-BASED STUDIES

5.1. Introduction

In their review, Hendry et al., (1991a) noted that the organisational character of a firm (for example, its age, size, ownership form and main industrial activity) could have an impact on its openness to new practices and ultimately the provision of training. Further, the infrastructure for training (for example, the activities of local enterprise and development agencies, TECs, LECs, etc.), especially in the locality in which the business is based, could encourage some resource constrained small firms to provide training for some of their employees for the first time.

A variety of triggers can lead to the provision of training by small firms / employers. Hendry et al., (1991a) noted, in most SMEs, the desire for new learning was generally promoted by factors associated with short-term economic and bottom-line pressures. For example, to rectify problems of production and to improve production / service efficiency and quality to enhance a firms' competitiveness. In addition, they noted the need for training by an SME reflected the quality of the labour supply in the local market where the firm was located, as well as the characteristics of the competition faced by an SME to recruit suitable employees.

A number of employer-based studies have examined the factors influencing training provision by small firms / employers. Studies conducted in the United Kingdom, Canada, Spain and the United States are summarised in Appendix 1. The remainder of this section will highlight the explanatory variables found to be statistically significantly associated with training provision. These variables are summarised in Table 5 and discussed in the remainder of this section.

5.2. Demographic Characteristics of Employers

5.2.1. Employment Size of Employer

The Cambridge Small Business Research Centre (1992) study noted larger, rather than smaller firms, were markedly more likely to have provided some of their employees with some type of external training. For example, only 25% of larger firms which had provided formal workforce training relied exclusively upon insiders, compared with 51% of micro-firms. Data from the West Midlands Survey presented in Table 4 also highlighted a similar finding. This result has been consistently documented elsewhere (*Greenhalgh and Stewart, 1987; Deloitte, Haskins & Sells et al., 1989; Training Agency, 1989; Blackburn and Hankinson, 1989; Blackburn, 1990; Booth, 1991; Goss and Jones, 1992; Green, 1993; O'Farrell et al., 1993; Alba-Ramirez, 1994; Australian Bureau of Statistics, 1994; Elias and Healey, 1994; White, 1994; Baldwin and Johnson, 1995; Boreham et al., 1996; Curran et al., 1996; Welch, 1996; Storey and Westhead, 1997; Westhead, 1997*). Further, this relationship is partly due to the fact that large firms were more likely to have operated apprenticeship schemes (*Soskice, 1994*) for young employees who were prepared to forego some personal financial remuneration during their apprenticeship in order to gain a credentialised ticket for skilled employment in a large firm environment. However, this is only a partial explanation since the relationship between firm size and training provision is consistent in sectors where no apprenticeship schemes operate.

Large organisations also provide training to improve communication, reduce monitoring costs and allow an effective management of employees (*Oi, 1983; Barron et al., 1987*). Training is provided by large organisations to ensure a high standard of product / service delivery to their customers (*Begg, 1990*). Further, Baldwin et al., (1995, p.18) noted,

> "...large firms have access to cheaper capital to finance investment in training (*Hashimoto, 1979*), that large firms can reduce the risk and therefore the cost of investment in training by pooling risks (*Gunderson, 1974*) and that large firms have a greater pay-off from training because their size and their exploitation of economies of scale have led to task specialization and, thus, a greater benefit for training (*Doeringer and Piore, 1971*)".

5.2.2. The Ownership Form of the Employer

A subsidiary organisation which forms part of a group may have a more extensive division of labour than an independent organisation (*Elias and Healey, 1994*). To develop a common group culture, as well as to ensure control and work practice systems are in place throughout the group, a parent company with considerable resources, information and technical assistance (*Osterman, 1995*) may provide training in its subsidiary organisations. Supporting this viewpoint, research has revealed that subsidiary organisations (who may have benefited from the economies of scale possibly in a large, although spatially dispersed, organisation) were more likely to have provided training than independent organisations (*O'Farrell et al., 1993; Osterman, 1995*).

5.2.3. Age of the Business

To integrate employees into the ways of the business, recently established businesses which may utilise newer technologies and have higher skill requirements (*Baldwin et al., 1995*) have been found to be significantly more likely to be training providers *(Elias and Healey, 1994; Westhead, 1997*). However, it has been suggested (*Baldwin et al., 1995*) that older businesses which may have more established and dense networks might be expected to have better information about where training would be most useful, compared with younger firms. Supporting this viewpoint, two recent studies found older firms were markedly more likely to have provided some type of training *(Baldwin et al., 1995; Westhead, 1997*). Westhead (1997) speculated, based on his empirical evidence, that the higher propensity for established firms between 21 and 50 years old to have provided planned on-the-job training was, in part, due to these organisations responding to changing market and technological conditions (for example, after an ownership and/or management transition). Overall, there is no consensus of evidence which suggests that the age of a business is significantly associated with the provision of training by employers.

5.2.4. Main Industrial Activity of an Employer

Curran et al., (1993) found the majority of surveyed service sector employers had provided their employees with some type of training. In fact, more than half of employees interviewed had received some training whilst with their employers. Much of this training was informal and had been provided to a range of occupational groups. However, due to differences in the technologies used and the kinds of products and services provided, employers engaged in some industrial activities may have different training needs (*Deloitte, Haskins & Sells et al., 1989; Baldwin and Johnson, 1995*). For example, the use of advanced manufacturing technologies has been found to be positively related to the provision of training (*Baldwin et al., 1995*). Abbott (1993) has, interestingly, suggested

that the training needs of small service firms are not necessarily the same as those apparent in small manufacturing firms[9]. The majority of multivariate studies have, however, failed to identify a significant relationship between the main industrial activity of an employer and the provision of job-related formal training. Due to data collection methods, most studies have been forced to explore this presumed relationship with regard to a small number of broad industrial categories. Nevertheless, some studies have noted that firms engaged in the construction sector were less likely to have provided training for some of their employees (*Miller and Davenport, 1987; Green, 1993; Baldwin and Johnson, 1995; Westhead, 1997*). The lower provision of training by construction businesses may, in part, be due to the fact that employers in this sector generally use labour-only subcontractors (who are already trained) rather than direct employees and often use them for short time periods (*Curran et al., 1996*).

5.2.5. Occupational Structure Within Firms

Abbott (1993) explored the training strategies of 81 small service sector firms in three localities in England. He found the majority of respondents reported that employees had received some type of training, with a strong relationship between the type of training received and occupational status. Most notably, professional and managerial employees were much more likely to have received formal training than other groups of workers. Again, this is also reflected earlier in the data presented in Table 4, surrounding the provision of training by employers in the West Midlands, where the unskilled workers were the least likely to have received training, whilst managerial workers were the most likely to have received external training. Informal training was the preferred method for skilled and unskilled respondents. Supporting this viewpoint, Boreham et al., (1996) during their survey of 139 accommodation establishment and grocery stores located in Brisbane, Australia found training was more likely to be delivered to managers than to service or other staff. Table 4, earlier, showed that the unskilled and semi-skilled were the most likely to have received on-the-job training, and managerial staff were the least likely to have received such training.

5.2.6. Technology Focus of Employers

Baldwin and Johnson (1995) in their employer-based study in Canada explored whether innovation and human capital development had been facilitated by training. They found training was one component of a package of strategies pursued by knowledge-based firms. Further, training occurred in firms where employers recognised labour skills were important. More specifically, formal and informal training incidence (as well as the numbers trained and the expenditure devoted to training of any kind) was found to be closely related to the importance that a firm gave to research and development, the use of new technologies and other strategies related to innovation. Training was, in addition, greater in firms which emphasised quality and a comprehensive human-resource strategy.

5.2.7. Location of an Employer

The location of an employer has been found to be associated with the provision of job-related formal training *(Johnson and Baldwin, 1995; Baldwin et al., 1995; Westhead, 1997*). To encourage local business development a variety of agencies, particularly those covering government designated assisted areas for regional assistance (*Birley and Westhead, 1992*) (for example, local enterprise and development agencies, TECs and LECs, the Welsh Development Agency and the Development Board for Rural Wales in Wales, Scottish Enterprise and the Highlands and Islands Development Board in Scotland

and the Rural Development Commission in England and the Local Enterprise Development Unit (LEDU) in Northern Ireland) have actively encouraged employers to provide job-related training (*Curran et al., 1996*). By providing subsidies to cover the cost of training provision (for example, training can remove a competitive constraint such as a skills gap created by technological change), local development agencies have sought to remove the 'ignorance' barrier and have encouraged more employers to provide job-related formal training. Westhead (1997) recently found employers located in the North and South West of England were markedly more likely to have provided some type of job-related formal training. He speculated that public subsidies directed towards local development agencies (for example, TECs, Business Links, the Rural Development Commission, etc. - agencies which cover assisted as well as non-assisted areas) may have directly (for example, by providing subsidised training programmes to small firms) as well as indirectly (for example, by directing owners / managers to sources training assistance from a variety of public agencies and private sector training providers) encouraged the provision of training (particularly, planned on-the-job training) by employers (for a dissenting view based upon a survey of employers in England and Wales alone see Curran et al., 1996)[10, 11].

5.3. Job Market Conditions

The quantity of training provided by an organisation is, in part, determined by the nature of the job market it faces (*Greenhalgh and Mavrotas, 1994*). A growing business may train new recruits as they join the business (*Johnson and Gubbins, 1992*). Similarly, if a business is located in a labour market associated with skill shortages it may be more likely to train existing members of staff (*Fuller et al., 1991; Elias and Healey, 1994*)[12, 13]. In addition, organisations which have experienced rapid employment growth and / or recruitment difficulties may have participated on externally organised formal / structured training programmes to enable their employees to take on new functions associated with dealing with larger, and perhaps more diversified markets (*Baldwin et al., 1995*).

Westhead (1997) found growing firms which had increased their absolute employment sizes over the past year were markedly more likely to have allowed their employees to attend off-the-job training courses such as day release courses and other part-time courses. In addition, he found a statistically significant relationship between whether a firm had participated on an inexpensive and focused formal / structured graduate student placement scheme (*Holmes et al., 1994*) and the provision of planned on-the-job training and off-the-job other part-time courses. Westhead speculated, based on his presented evidence, that the ignorance barrier to training provision could be lowered if small firms had directly experienced the benefits associated with training provision.

5.4. Future Recruitment Expectations

Similarly, firms which anticipate future recruitment difficulties may be more likely to train their existing employees (*Fuller et al., 1991; Elias and Healey, 1994; White, 1994, Westhead, 1997*)[14]. Supporting this viewpoint, Westhead (1997) found firms which perceived recruitment would present a difficulty over the next two years were markedly more likely to have allowed some of their employees to attend off-the-job part-time courses.

5.5. Summary

The evidence presented here from a variety of employer-based studies points to the following conclusions. First, a manager or an employee is less likely to be in receipt of training (particularly, job-related formal training) if he or she works in a small, rather than a large, firm. Second, a variety of other organisational characteristics (for example, age, ownership form, main industrial activity and location), job market conditions and the expectation of recruitment difficulties can influence the provision of training by employers.

6. TAKE-UP OF TRAINING: EMPLOYEE-BASED STUDIES

Leading employee-based studies conducted in the United Kingdom, the United States and Australia which have explored the take-up of training by individuals / employees are summarised in Appendix 2. This appendix shows a variety of statistical methods have been utilised to isolate the key issues / explanatory variables associated with the take-up of training by individuals / employees. The variety of explanatory variables found to be statistically significantly associated with the take-up of various types of training are summarised in Table 6. This table suggests the take-up of training provided by an employer can be influenced by the characteristics of employees (for example, age, gender, race, marital status, aptitude, level of qualifications, tenure period with employer, occupational status, etc.) as well as the characteristics of employers (for example, ownership form, employment size, location, main industrial activity, etc.). Blundell et al. (1996, p.9) succinctly summarised the results from previous employee-based studies as follows:

- "males have better access to training than females;
- training decreases with age;
- higher educational qualifications raise the probability of receiving training;
- industries with growing or changing technology provide more training;
- union members receive more training than non-union members;
- the probability of training decreases with job tenure;
- part-time workers receive less training than full-time workers;
- large establishments provide more training than small establishments
- public sector establishments provide more training than private sector establishments;
- minority groups have a lower probability of receiving training;
- training probability is lower when unemployment is high".

7. FACTORS INFLUENCING TRAINING PROVISION: A CRITIQUE

The limited number of employer-based studies that have focused on the provision of job-related training by small firms / employers have isolated a number of key issues influencing the provision of training. Not surprisingly, many questions still remain unanswered (*Altonji and Spletzer, 1991*). In addition, previous research is open to the following criticisms (*Westhead, 1997*):

i. The majority of studies are employee-based and have provided little information on the small firm / employer who is at the heart of the training provision discussion (*Osterman, 1995*).

ii. The limited number of employer-based studies have generally focused upon the provision of training within a single locality (*Kirby, 1990; Fuller et al., 1991; Jones and Goss, 1991; Goss and Jones, 1992; Johnson and Gubbins, 1992; Elias and Healey, 1994*). It has, however, been acknowledged (*Kirby, 1990; Elias and Healey, 1994; Veum, 1996*) that it is difficult to generalise from a single locality.

iii. It is also difficult to generalise from small samples of employers (*Kirby, 1990; Johnson and Gubbins, 1992; Jones and Goss, 1991; Osterman, 1995*).

iv. Comparative research is difficult because a variety of definitions of training have been utilised. Some studies, have adopted a very broad definition of training to include informal as well as formal training (*Abbott, 1993*), whilst others focused upon formal training alone (*Elias and Healey, 1994*).

v. Not all studies have distinguished between different types of informal and formal training (notable exceptions to this trend are the studies conducted by *Jones and Goss (1991), Lynch (1991, 1992), Goss and Jones (1992), Abbott (1993), Green (1993), Greenhalgh and Mavrotas (1994), Alba-Ramirez (1994), Dolton et al., (1994), Elias and Healey (1994), Baldwin and Johnson (1995), Baldwin et al., (1995), Veum (1995) and Curran et al., (1993, 1996)*).

vi. Few employer-based surveys have explored the factors associated with the provision of training within a multivariate framework. Previous studies have, therefore, failed to clarify some of the causal mechanisms at work influencing the provision of training (*Alba-Ramirez, 1994; Elias and Healey, 1994; Baldwin and Johnson 1995; Baldwin et al., 1995; Osterman, 1995; Westhead, 1997*).

8. TRAINING PROVISION AND SMALL FIRM PERFORMANCE

8.1. Introduction

This section reviews a number of studies which have explored the relationship between training provision and small firm performance. Our central purpose is to examine the extent and nature of this link. We analyse the existing research on this topic in several different ways. In section 8.2 we examine the 'special' case of the impact of training of new business owners on the performance of *new* enterprises. We then distinguish between general training in SMEs (in section 8.3) and management training in section 8.4. In both these instances, 'hard' measures of business performance are identified - most notably survival, non-survival or growth (in turnover, employment) etc. In section 8.5 we take a wider view by examining the relationship between training and SME performance, where the latter includes intermediate performance outcomes, such as absenteeism and recruitment etc.

First impressions from the 'popular' literature are that training provision clearly enhances small business performance (*Confederation of British Industry, 1986, 1993, 1995; Midland Bank, 1993; Small Business Bureau, 1993*). All five documents have made virtually identical statements. '*Finance for Growth*' produced by the Confederation of British Industry (1993) may be regarded as typical:

> "In the SFC 1988 report it was recommended that lending should be made on more favourable terms to businesses whose managers had undertaken prescribed training. This carrot and stick approach is justified by figures from the DTI which showed that failure rates could fall from one in three in the first three years, to one in ten where training was undertaken".

Our efforts to locate the ultimate source of this information, however, proved tortuous and are chronicled by Becket (1996). The source was eventually tracked to a study part funded by the Distributive Industry Training Trust. Despite warnings of the Trust against the use of this interim report, it has been extensively cited, even by a former DfEE minister, to demonstrate the 'impact' of training. Our position, in echoing that of the Trust, is that despite its frequency of citation, it is misleading to suggest that training can lead to failure rates in smaller firms being lowered by a factor of three. The evidence presented in the remainder of this section points to a more realistic appraisal of this relationship.

8.2. Enterprise Training for New Firm Founders

Since 1979, a variety of schemes have been introduced to encourage people to enter self-employment or start their own business. One such scheme was the Enterprise Allowance Scheme (EAS) and its successor the Business Start-Up Scheme (BSUS). Their objective is to provide financial assistance (and from 1987 onwards participants in EAS and BSUS were generally provided with a single day's training on, for example, how to develop a business plan) to help unemployed people create viable new businesses which would not otherwise exist. EAS and BSUS entrants have been tracked and the performance of the new businesses have been monitored over relatively short time periods. The most recent eighteen-month study of BSUS was completed by Tremlett (1993) and the most recent three-year study of EAS was presented by Maung and Erens (1991).

These studies do not show a clear positive relationship between participation on a training programme and enhanced subsequent new business performance. There appears little evidence to suggest that businesses where the founder received training performed better than those which had not. Indeed, the Tremlett (1993) study found that businesses established by individuals who had participated on a training programme had a (non-significantly) higher probability of closure than those who had not. The higher closure rate of the latter group of businesses may, in part, be due to the fact that businesses already experiencing difficulties were more likely to have participated on training programmes than businesses with no immediate problems.

In 1987, it was claimed by Business in the Community (BIC) that the local network of advice and assistance provided by enterprise agencies (EAs) in England and Wales had contributed to a higher survival rate among businesses they had helped to start. In fact, BIC (1987) claimed,

> "the failure rate of EA assisted firms in the first three years after start-up is one of the order of 1 in 6 (16 per cent) compared with 1 in 3 (33 per cent) for all new firms, based on data drawn from the VAT register".

However, considerable doubt can be cast upon this statement. First, it is not valid to simply compare EA clients with VAT registered businesses in general since deregistration of the latter includes reasons such as take-over and change of legal status, in addition to closure. Second, their is no reason to believe that EA clients are otherwise similar to VAT-registered businesses. Smallbone (1989) studied the survival of new firms which had received free businesses counselling from an EA in an outer London borough. During the 1980s, Smallbone found that 42 per cent of new firms had ceased trading within 3 years of start-up and he concluded,

> "...the presence of the EA cannot be said on this evidence to increase the chances of survival for clients who approach it".

Gray (1989) monitored the effectiveness of enterprise training with regard to data from a postal survey of twenty-five firms in the Mezzogiorno region of southern Italy. The study focused on measurable objective changes to business performance one year after the completion of the enterprise training course. Gray concluded that the training course had been beneficial. Nearly three-quarters of firms reported an increase in sales turnover and 60% reported they had increased their workforce. This favourable conclusion, however, needs to be treated with some caution on a number of counts. First, the sample size of the study was very small. Second, responses were not gathered from a random sample of firms attending the enterprise courses. Third, the performance of firms were not analysed in a multivariate framework. Fourth, the performance of firms attending the training course were not compared against a similar group of firms that had not attended a training course.

8.3. Link Between Training Provision and Hard Measures of Small Firm Performance

Relatively more studies have, however, explored the relationship between training provision and small firm performance. Lynch (1994) during her review of the literature, identified several studies in the United States which related enhanced business productivity to training provision by employers. The key findings from these studies are summarised in Table 7. For example, Weiss (1994) found informal learning-by-doing generated rapid employment productivity during the first month of employment. However, six months later, there was little evidence of any positive productivity change associated with learning-by-doing. In marked contrast, Bartel (1992) in his study of manufacturing firms in 1983 and 1986 found current on-the-job training programmes increased firm productivity by an estimated 17%. Similarly, drawing upon a survey of SMEs across all sectors of the economy, Bishop (1994) found current on-the-job training programmes increased firm productivity by an estimated 16%, whilst previous on-the-job training increased firm productivity by 9.5%. Empirical evidence from an employer-based survey conducted by Alba-Ramirez (1994) supports the results in the American studies (Table 8). He found formal training provision increased a firm's output per employee.

The performance of 38 small firms in Northern Ireland which attended export marketing training programmes was monitored over the 1985 to 1990 period by Bell et al., (1992, p.43). They found almost 62% of firms reported they had obtained export sales which could be directly attributed to programme participation. For example,

> "...actual sales approaching £2 million ($4 million) as a direct result of programme participation were reported. Respondents also anticipated new business to the value of £3.5 million ($7 million)" (*Bell et al., 1992, p.44*).

The benefits from the training were, however, not immediate, with several firms reporting growth in sales three years after participation on the programme. Unfortunately, the performance of firms attending the export training courses were not compared with otherwise similar firms which had not received any form of training, so as to obtain a true measure of 'additionality'.

Wynarczyk et al., (1993) were unable to find a link, once a variety of variables had been held constant, between the provision of training and firm performance. Boreham et al., (1996) in their study of small and medium-sized employers in Brisbane, Australia were, in addition, unable to detect a significant positive link between training and measures of profitability (i.e., an index which measured each manager's impressions of their firm's profitability) and productivity (i.e., an index which measured each manager's opinion of the level of labour productivity compared with other workplaces in their industry) in their multiple variance analysis. The Cambridge Small Business Research Centre (1992) survey also failed to detect a strong link between training provision and SME performance. This study reported 49% of firms were not satisfied with the quality of government-sponsored agency training, and only 4.5% were very satisfied. Storey (1994, p.127) reviewed two other studies (*Woo et al., 1989; Jones, 1991*) which tested the relationship between business management training and business growth. Both found no identifiable relationship between training provision and business growth.

Based on returns from a survey of 1,480 growing SMEs (defined as those businesses that had grown in employment, sales and assets between 1984 and 1988) in five regions and ten industries in Canada, Baldwin et al., (1994) found business success was not associated with training alone. They concluded that labour issues played only a minor role in discriminating between more-successful (with regard to growth in profitability) and less-successful firms. Their univariate empirical analysis revealed that both the proportion of employees and the expenditure per employees on training were negatively correlated with business profitability. Contrary to expectation, they found the most-successful businesses tended to train fewer workers than a less-successful group of firms. In addition, the more-successful firms were more likely to have provided formal training and less likely to have undertaken informal training. With regard to Government programmes to encourage training in SMEs. Baldwin et al., (1994, p.78) concluded,

> "The more-successful group of firms are not characterized by greater training intensity and, therefore, this group does not place a higher value on government training programs.
>
> The results for training might disappoint the advocates of the importance of training. This should not be so. The results do not mean that training is counter-productive. They only indicate that the more-successful do no more training than the less-successful firms".

8.4. Link Between Management Training Provision and Hard Measures of Small Firm Performance

At first sight, there seems to be some empirical support for the hypothesis that management training provision can improve the performance of SMEs from the work of Birley and Westhead (1990). In their cross-sectional study of 249 small firms in the United Kingdom, they found a significant positive association between management training provision and high levels of sales turnover in the prior financial year and the total employment size of surveyed businesses within a univariate as well as a multivariate framework. The causality of the statistical association between management training and business growth, however, was not specifically explored in this study. It is assumed that the provision of management training should lead to improved firm performance but it may be that only successful firms can afford to provide training for their managers.

A recent univariate study of fast-growth firms in the Republic of Ireland and Northern Ireland by Kinsella et al., (1994) noted that 73% of fast growth firms had received some form of management training compared with 40% of 'matched' firms. In the Irish context, this is also likely to be associated with state financial support which is conditional upon participation on a training programme. It is, therefore, difficult to disentangle the effects of the financial assistance from the effects associated with the provision / take-up of training.

The importance of management training provision was explored by Hewitt (1993) in her comparative study of 70 small engineering firms in Northern Ireland and Massachusetts in the United States. Using a matched-pairs methodology, to explore differences between the two areas, she found small firms in Massachusetts spent more money on training their managers than comparable firms in Northern Ireland. Interestingly, her univariate analysis

revealed that the Massachusetts firms were outpacing their Northern Ireland counterparts with respect to sales turnover levels as well as the penetration of much broader geographical markets in the distribution of their products. However, it would be unwise, without taking into account more factors, to link these observations.

In the United Kingdom, a number of schemes to improve the quality of management within established small firms have been introduced. The Business Growth Training (BGT), Option 3, scheme was introduced in 1989 by the Training Agency. It was designed to overcome the perception that smaller firms were less likely to train their workers, primarily because of scepticism on the part of owner-managers of the value of this training. To overcome this, BGT Option 3 provided smaller firms with up to half of the costs, to a maximum of £15,000, of employing a consultant to train and develop their management staff. One objective was to persuade small firms of the benefit of such training so that, once the subsidy had been paid, firms would choose to continue to purchase training at full market rates. Another objective was to observe improvements in subsequent firm performance associated with the provision of training.

Marshall et al., (1993, 1995) conducted an assessment of BGT and found the provision of the subsidy led to a significant one-off rise in the quantity of training undertaken by small firms. There also appeared to have been some effect in encouraging firms, once the subsidy had been exhausted, to continue with a higher level of management training than had been the case prior to the provision of the subsidy. Yet, on the key area of whether training enhanced subsequent firm performance, the researchers were much more equivocal. They stated:

> "We were less successful in demonstrating that human resource development thereby improves business performance..... and the lack of a clearly demonstrable link between training and firm performance is one of the reasons why many firms are reluctant to invest in human resources" (*Marshall et al., 1993, p.346*).

Additional case study evidence revealed that if the conditions were not right, management development projects had a modest impact. Marshall et al., (1995, p.88) concluded,

> "Management training projects are less effective in the very smallest firms; they work best in firms that have the managerial capacity to make the necessary commitment and absorb both management and business development. The research also shows that firms carrying out narrowly defined management training projects, or those that have carried out significant amounts of management training before, and already have a staff and business plan, may not benefit as much as other SMEs from training and development projects of this nature. In contrast, where managers in firms have limited experience of management training, and the firm has attendant problems such as a weak management structure, the research suggests it will not normally be possible, given the pressures of running a small business, to make real gains in much less than one year".

Development needs of 120 manufacturing and service firms located in three regions in England were monitored over time by Stanworth et al., (1992). This longitudinal study of firms concluded that,

> "The most profitable investment now on offer in the field of small business management training is, almost without doubt, that directed towards improving survival rates within the 5-50 workforce-size 'corridor' and accelerating movement through the corridor..." (p.3).

It confirmed the diversity among owner-managers with regard to the value of training. Whilst a number of respondents suggested training was an investment, a sizeable proportion claimed it was risky. Awareness of Government-backed initiatives was higher amongst larger firms with 20 to 49 employees than amongst smaller firms. Take-up of BGT was also highest amongst the 20 to 49 employee group. Overall, there was general uniformity amongst respondents in the view that training was important.

> "Here, approximately three-quarters said they regarded training as 'very important' with over half the remaining balance claiming it to be 'quite important'. These attitudinal responses were, however, completely at variance with observed and monitored behaviour patterns. It appeared that 'training' was viewed in something of a 'motherhood and apple-pie' vein, rather like the desirability of taking regular physical exercise and maintaining a controlled diet - few would challenge their desirability but health statistics deny their widespread adoption in practice. Training, like exercise, can often be viewed as a long-term investment and relegated to a secondary level of priority in the face of frantic day-to-day business pressures and constraints" (*Stanworth et al., 1992, p.4*).

The performance of surveyed firms over a three year period prior to the project (1986 to 1989) was ascertained by Stanworth et al. Additionally, data was collected surrounding the performance of firms after attending the Business Development Workshops (over the 1989 to 1991 period). The performance of firms after attending the workshops was found to be very similar to that recorded prior to attending the workshops. Consequently, this longitudinal study failed to identify a clear positive relationship between training provision (for example, attendance at the Business Development Workshops) and enhanced subsequent business growth, possibly because of very different macro-economic circumstances over time. Unfortunately, no data were collected on non-attendees.

Finally, Wingham and Kelmar (1992) reviewed thirty-six studies from the United States, Canada, Europe and Australia exploring the determinants of success strategies for SMEs. They also failed to isolate management training as a key factor associated with business growth. Nevertheless, they concluded that,

> "Firm competencies, which are represented by the 'substance and shadow' of the entrepreneur, are vital to the growth of the firm....It was also clearly shown that the ability of the entrepreneur was a strong factor in developing firm characteristics and firm competencies. This further confirms the notion that the owner/manager of a small enterprise is the major factor in its success and even survival".

8.5. Link Between Training Provision and Intermediate Measures of Small Firm Performance

Evaluations of external training programmes to small firms have generally identified high levels of satisfaction with the training *provided (Confederation of British Industry, 1994;*

Warr, 1993; Welch, 1996). Almost without exception, trainees have reported on the 'happy sheet' completed by each participant at the end of a course that the training provided exceeded their expectation in terms of its value. For example, Cushion (1995) in his evaluation of the City of Norwich College Scheme found 97% of participants would have 'definitely recommended' the course to some one else. Participants also reported that their competence and understanding of financial management had improved by 55% as a result of this scheme.

Finally, Amos et al., (1997) recently examined the relationship between education, training and development activity and 'middle market' company performance. This study focused upon several performance indicators, including self-assessment and 'objective' financial performance measures. The multivariate regression analysis failed to identify a clear and unambiguous relationship between measures focusing upon the education and training of Board Directors and enhanced company performance. However, companies which combined education, training and development reported slightly better levels of performance with regard to 'intermediate' performance measures such as lower absenteeism, lower defects rates, etc.

8.6. Summary

Evidence presented here from a variety of different countries and covering different macro-economic circumstances points to the following conclusions. First, there is no clear consistent evidence linking the provision of training to enhanced small firm performance. Second, it tends to be the poorer quality research which is the most likely to have identified a positive association between training provision and enhanced subsequent firm performance.

9. TRAINING PROVISION AND SMALL FIRM PERFORMANCE: A CRITIQUE

Due to practical problems, as well as resource availability, previous research which has explored the relationship between training provision and small firm survival and performance is open to a number of *criticisms (Storey and Westhead, 1994; Westhead and Storey, 1996)*. We believe, future research to inform Government policy should address the following issues:

i. The majority of studies conducted have derived empirical evidence from snap-shot studies of firms in limited geographic areas which have not measured the full impacts training provision can have on small firms over a long period of time.

ii. Results from studies are very difficult to compare. The majority of studies are based on small samples and focus upon different industries and different time periods of study. In addition, some studies have failed to explore the impact of training provision in small firms with less than 10 employees and in different employment size categories.

iii. The limited number of studies that have attempted to evaluate the effectiveness of training provision have been somewhat piecemeal and, frequently, programme-specific.

iv. The performance of small firms providing training for some of their employees have too infrequently been compared with a comparable 'control' group of small firms that have not provided any form of informal or formal training for their employees.

v. A number of studies have failed to present a clear definition of what they regard as 'training'. Further, most studies have failed to distinguish between training of the workforce, training of the management and the training of the owner / founder. It is clearly unreasonable to treat all forms of training as identical. There is, therefore, a need for additional research to identify whether particular types of training are more effective than others in encouraging business survival and enhanced subsequent business performance. The 'quality' of training provided by small firms and its various outcomes also warrants additional research attention (*Boreham et al., 1996*).

vi. The majority of studies are technically primitive and have only measured the impact of training provision in small firms within a univariate statistical framework. Surprisingly, few studies have measured the impact of training provision in small firms within a multivariate statistical framework, taking into account other factors which may influence firm performance.

vii. Studies have failed to appreciate that a number of other management development options are open to managers / owners of small firms to enhance business performance (*Confederation of British Industry, 1995*). The benefits of

training, therefore, need to be set alongside those alternative methods of increasing the internal efficiency of small firms.

viii. There has been little objective research on the content and structure of small business courses. Further, "The relationship between course content and teaching/learning strategies, on the one hand, and eventual performance as owner-manager of a small business, on the other hand, is even less researched" (*Curran and Stanworth, 1989, p.14*).

ix. Very little qualitative research has been undertaken to ascertain subtle changes in internal performance and organisation structure of small firms which may be ignored by quantitative research methodologies (*Johnson and Gubbins, 1992*).

x. Many of the former British Conservative Government's training initiatives were launched, changed and replaced, nationally, without any real evaluation (*Jennings et al., 1992*) over long periods of time.

xi. The training needs and performance of 'special' groups such as ethnic-minority owned SMEs (*Marlow, 1992; Ram and Sparrow, 1993*), is a relatively neglected area of research. Additional research is warranted which compares the performance of different types of firms after the provision of subsidised training.

10. BENEFITS ASSOCIATED WITH THE TAKE-UP OF TRAINING FOR INDIVIDUALS / EMPLOYEES

10.1. Introduction

Training provision may not only benefit the training provider. Individuals / employees can benefit in several ways from participation on a training programme. Numerous employee-based studies have focused upon the social and private rates of return to trained employees after their period of training. The following sections highlight the results from selected studies which have focused upon the benefits associated with the take-up of training for individuals / employees.

10.2. Impact of Training on Earnings and Productivity

According to human capital theory (*Becker, 1964*), it is assumed that an individual (assumed to be perfectly informed) will invest in training to the extent that future increases in earnings will repay the investment. Tables 7 and 8 indicate that training provision can benefit a recipient employee in terms of higher wages after the training period. In the absence of direct measures of productivity gains for employers, studies have measured the real earnings growth reported by individuals / employees to gauge the productivity impact of the training (*White, 1994*). Blundell et al. (1996, p.2) stated,

> "Presumably, any real wage increase will have to be paid out of productivity gains, so real wage increases should provide a lower bound on the likely size of productivity increases".

A number of studies have identified a strong positive relationship between training take-up by an employee and subsequent higher earnings (*Duncan and Hoffman, 1979; Lillard and Tan, 1986; Fredland and Little, 1980; Ashenfelter and Card, 1985; Mincer, 1988; Barron et al., 1989; Brown, 1989; Helzer, 1989; Payne, 1990; Lynch, 1991, 1992; Couch, 1992; Booth, 1993; Blanchflower and Lynch, 1994; Groot et al., 1994; White, 1994; Bartel, 1995; Arulampalam et al., 1995; Blundell et al., 1996; Lengermann, 1996; Payne et al., 1996*) (for a dissenting view see Dolton et al., 1994a; Green et al., 1996). White (1994) interestingly noted that the provision of continuing new technology training by an organisation, on average, increased the earnings of those individuals who had participated on the training programme as well as those individuals who had not received any training.

10.3. Impact of Training on Labour Mobility

Labour economists have, in addition, focused upon the employment and occupational effects associated with the take-up of training by individuals. Main and Shelly (1990), for example, found participation on the Youth Training Scheme (YTS) in Britain improved the attractiveness of the participant to potential employers, hence improving the individual's ranking in the queue for jobs. A similar effect has been noted elsewhere with regard to a variety of training programmes (*Whitfield and Bourlakis, 1990; Main, 1986, 1991; O'Higgins, 1994) (for a dissenting view see Dolton et al., 1994b*). Further, results from employee-based studies have suggested that the take-up of training by individuals / employees can benefit employers with regard to reduced labour turnover / mobility from

those who had received some type of training (*Lynch, 1991; Elias, 1994; Elias and Healey, 1994; Greenhalgh and Mavrotas, 1996*) (Table 8).

10.4. Impact of Training on Occupational Desirability and Job Satisfaction

White (1994) recently explored the relationship between the take-up of continuing training for new technology by individuals and scores reported by individuals with regard to the Hope-Goldthorpe scale of occupational desirability. Results from the multiple regression analysis showed continuing training had a significant positive effect in raising individual occupational attainment (particularly, those employed in establishments with 1,000 or more employees). Moreover, White explored the relationship between the take-up of continuing training for new technology by individuals on an 11-point rating scale with regard to how satisfied or dissatisfied they were with their present job. Results from the multiple regression analysis suggested individuals who had received increased (or the same level of) training were much more satisfied than those receiving decreasing levels of continuing training.

Ogbonna and Noon (1995) have, however, shown that the positive outcomes associated with a training experience were more likely to be reported by white rather than ethnic minority trainees. Their study focused on the positive outcomes of training participation with reference to individuals / employees located in a single (unspecified) county in Britain. Employment training was monitored over a twelve month period (June 1992 to May 1993). Their qualitative analysis revealed ethnic minority trainees were generally positively disposed towards training and improving their skills (for a similar finding see Marlow, 1992). They, however, found ethnic minority trainees were less successful than their white counterparts in securing jobs after their training placement. In addition, Ogbonna and Noon found ethnic minority trainees had obtained proportionately fewer National Vocational Qualifications (NVQs) than their white counterparts.

It has been suggested that individuals / employees can benefit from entry training provided by an employer because it can provide important information about the organisation as well as their new job and role. Empirical evidence surrounding the relationship between entry training for newcomers to an organisation and work outcomes, nevertheless, is rather mixed. Louis et al., (1983) and Nelson and Quick (1991), for example, failed to find a significant relationship between the availability of entry training and work outcomes. Saks (1996), in marked contrast, found the amount of time spent on formal entry training (measured on an eight-item scale) by newcomers was associated with a variety of work outcomes. His analysis of questionnaire returns from 152 newly hired entry-level accountants employed in ten large and medium-sized accounting firms in the vicinity of a large Canadian city revealed the amount of training received was positively related to job satisfaction, commitment to the organisation and profession, ability to cope, and job performance, and negatively related to the intention to quit the organisation and the profession.

10.5. Summary

Numerous studies have shown that individuals / employees obtain a variety of benefits after completing training programmes. In some instances, the impact was in terms of higher wages, whilst in other instances it led to increased job satisfaction. For unemployed

individuals, participation on a training programme generally enhanced their probability of re-employment. The really striking contrast is between the evidence on the impact of training upon the trainee, where the positive links seem quite robust, and the evidence on the impacts on the training provider (i.e., the small firm) where the research has not demonstrated conclusively a strong link between training and business benefits.

11. CONCLUSIONS AND IMPLICATIONS FOR RESEARCHERS

11.1. Conclusions

Over the last decade, there has been a considerable growth in the training 'industry', not only in terms of the number, but also the variety, of training schemes on offer *(Planning Exchange, 1995)*, much of it supported from the public purse. Despite this, only a small number of employer-based studies have isolated the combination of factors associated with the provision of various forms of training. Even fewer studies have explored the relationship between training provision and subsequent business performance.

The central point of this review is that it is clearly unreasonable to treat all types of training as identical. Some training may focus upon developing particular functional skills, other types of training may focus upon SMEs at particular stages in their development - start up, growth businesses, etc. Public organisations such as universities and colleges may provide particular types of training whilst alternative types of training may be provided by private sector training consultants. Some courses are for one-day or less whereas others are in a distance learning format or taken over a long period of time.

Our highly subjective impression is that some types of training may be effective in improving firm performance whilst others are not. However, during this review, we were unable to consistently document methodologically well conducted research evidence which showed that the provision of (some types of) training by small firms clearly and consistently enhanced the subsequent performance of firms which had provided this training for their employees. This may be either because of a lack of a positive impact on subsequent performance or because of the difficulties of attributing cause and effect.

11.2. Implications for Researchers

The reasons for the absence of a clear positive impact on small firm performance may be the poor quality of the training provided, the fact that it is often over too short a period to exert an influence upon the firm, that perhaps some types of training are more effective than others and that the poorer forms dominate the rest. In its defence, the 'training industry' can claim that the quantity, variety, intensity and quality of training provided by small firms has yet to be adequately monitored and evaluated.

As intimated above, whilst some research is excellent there is much which suffers from the problems we identified in Section 9. These include focusing upon 'snap shot' surveys rather than the continuous monitoring of firms over time, the absence of the use of 'control groups' and an emphasis on 'happy sheets' rather than 'hard' statistical analysis.

To develop appropriate policies on this important management issue, policy-makers must be aware of the shortcomings of some previous research as well as areas which warrant additional research attention. The following issues should be considered by researchers, many of which are, of course, taken into account in the 'leading edge' research.

i. Studies should clearly define what they mean by 'training'. The nature and form of training provided by employers should be consistently measured covering informal in-house training, on-the-job training as well as various types of off-the-

job training (*Blundell et al., 1996*). Researchers should, in addition, explore the extent and factors associated with the provision of training provided by employers which has been taken up in the employees rather the employers time. The extent and factors associated with the take-up of informal training, induction *training (Curran et al., 1996)*, instrumental training (for example, training of a directly vocational or technical nature) and sophisticated training (for example, the provision of programmes of a more developmental and innovative nature*) (Goss and Jones, 1992*) should receive additional research attention. Similarly, the extent and factors associated with the take-up of formal vocational training by employees at their own expense needs to be explored (*Lynch, 1991; Stevens, 1994b; Blundell et al., 1996; Greenhalgh and Mavrotas, 1996; Lengermann, 1996*). The factors associated with the provision of training which results in a formal qualification (*Blundell et al., 1996; Curran et al., 1996*) for the recipient warrants particular attention. As intimated above, researchers and policy-makers must appreciate that the factors associated with the provision of on-the-job training may not be the same as those associated with the provision of informal training and various types of off-the-job training.

ii. Additional research is required on the type of training provided and its impact on subsequent small firm performance. The links between various types of training (for example, informal in-house training, formal on-the-job training and various types of off-the-job training) and/or the duration, intensity and scope of training provision (for example, the number of training schemes provided and/or the total hours spent on training programmes per hours worked) (*Booth, 1991; Green, 1993; Miller, 1994; Baldwin and Johnson, 1995; Curran et al., 1996; Veum, 1996*) and business performance need to be explored within a qualitative as well as a quantitative multivariate statistical framework.

iii. Aggregate macro-level as well as micro-level research is required to explicitly test the 'ignorance' or 'market forces' explanations for the uneven provision of job-related formal training by employers.

iv. Research in this area has been dominated by cross-sectional studies. As a result, the nature of the data analysed in training provision and business performance studies has made inferring causation problematic. There is, therefore, an urgent need for longitudinal studies which measure the assumed positive impacts training provision has on subsequent firm performance. A variety of 'hard' and more subtle 'soft', before and after, measures need to be collected to assess the added-value to small firms associated with the provision of various types of training.

v. A relatively small number of employer-based studies have used multivariate statistical techniques to carefully identify the combination of factors associated with the provision of training. Moreover, only a small number of multivariate studies (and matched sample studies) have been conducted which have tried to isolate the contribution of training provision to subsequent business performance. As a result, many existing studies may suffer from omitted variable bias. More refined models, seeking to explain the provision of formal training / business performance should, therefore, be developed which include a wider range of explanatory variables. Future studies exploring the factors associated with the provision of training by employers as well as subsequent small business performance should include a wide variety of contextual factors. Researchers should continue to collect data on the demographic characteristics of employers (for example, industry, location, age, employment size, ownership forms, number of products / services, main industrial activity of an employer, the location of an employer, etc.,), job market conditions (for example, whether growing organisations resolve their skill shortage problems by training new recruits and existing members of staff) and whether a firm perceives future recruitment difficulties. The following factors should, however, be considered for inclusion in future multivariate studies: the characteristics, attributes, education and ambitions of owners / managers (*Gibb, 1996*); factors related to the composition of the workforce (such as race, gender, marital status, level of educational attainment) (Miller, 1994); the career aspirations of *employees (Greenhalgh and Mavrotas, 1994*); occupational composition within a firm (*Deloitte, Haskins & Sells et al., 1989; Abbott, 1993; Elias and Healey, 1994*); the organisational structure of a business (*Goss and Jones, 1992*); work organisation practices (*Osterman, 1995*); whether employees in an organisation were represented by a union (*Booth, 1991; Claydon and Green, 1992; Greenhalgh and Mavrotas, 1994; Veum, 1995*); and whether the firm had participated on a subsidised training programme (*Westhead, 1997*).

vi. The nature and content of the goods and services provided by an employer may have an impact on the decision to provide job-related formal training and subsequent business performance. The majority of studies have, however, focused upon on a small number of sectors which are too broad to capture fine industry level differences. Additional research, focusing upon large and representative samples of firms engaged in a variety of sectors is still required to conclusively detect whether narrow sectoral differences are important influencing the provision of various types of job-related formal training.

vii. To develop more appropriate policies to encourage the provision of on-the-job and off-the-job formal training by employers, further theoretical and conceptual work needs to be conducted surrounding the triggers and the processes (*Johnson and Gubbins, 1992*) leading to the provision of general, transferable and specific training (*Greenhalgh and Mavrotas, 1996*) in SMEs as well as the barriers to training provision (*Kirby, 1990; Curran et al., 1996*).

viii. Detailed employer-based research into the 'quality' of various types of informal and job-related formal training needs to be conducted to inform policy-makers more fully as to the actual links between training and the effects desired by training providers, trainees and policy-makers.

ix. There is a need for cross-national research surrounding the factors associated with the provision of job-related training by employers as well as the links between training provision and subsequent business performance. By replicating a study conducted in the United Kingdom, in a variety of national environments, the wider applicability (or generalisability) of the results from the United Kingdom study can be assessed.

Additional research evidence will provide policy-makers with more accurate assessments of the direct and indirect benefits as well as the costs of a policy decision to encourage more SMEs to provide formal training for some of their employees. A key question which needs to be addressed is whether employers continue to provide job-related formal training for some of their employees once public subsidies have been removed.

NOTES

1. Parker and Vickerstaff (1996) noted TECs and LECs covering high-density urban areas found it more difficult to involve their local SMEs in training programmes. In marked contrast, TECs and LECs operating in rural areas with widely dispersed industry had developed appropriate delivery mechanisms to encourage the take-up of youth training, employment training and training credits by local SMEs.

2. Gunderson' s (1974) discussed the case for Government supported training when a less than socially optimal amount of training is provided by employers. A case for Government supported training may be necessary when there exist market imperfections and equity considerations, as well as market failure due to externalities (for example, transaction costs including exclusion costs, costs of disequilibrium and costs of communication and information), high risk and uncertainty (for example, the private risk to the owner of a small firm of providing training is greater than the social risk of not investing in training) and merit goods (for example, certain disadvantaged groups, such as very small firms, are locked in to not investing in training and the present consumption pattern may not be what is best for them in the long-run).

3. "From an exchange theory perspective, training may be viewed as an investment in the relationship between a company and a person and can contribute to an employee's organizational commitment...Employees may view an effective training experience as an indication that the company is willing to invest in them and cares about them; thus, training may enhance their commitment to the organization" (*Tannenbaum et al., 1991, p.760*).

4. For example, drawing upon the work conducted by Noe (1986) Facteau et al., (1995, p.3) identified three incentives for attending a training course: "...intrinsic incentives (the extent to which training meets internal needs or provides employees with growth opportunities), extrinsic incentives (the extent to which training results in tangible external rewards such as promotions, pay rises, and higher performance evaluations) and compliance (the extent to which training is taken because it is mandated by the organization)".

5. Employers are less likely to provide 'general' transferable skills training because of the difficulty of capturing the returns to training in the absence of deferred compensation schemes. As a result, employers will be more likely to provide firm-specific non-transferable skills training (*Elias, 1994*). Further, employers are more likely to provide firm-specific training rather than general training (*OECD, 1991; Hyman, 1992*) without the need for Government subsidies because the expenditure on firm-specific training accrues directly to the firm (*Baldwin et al., 1995*).

6. Greenhalgh and Mavrotas (1996) noted males working in small firms were more likely to move between workplaces than those employed in large firms.

7. A theoretical discussion surrounding the poaching externalities has been presented (*Stevens, 1994a, 1994b; Greenhalgh and Mavrotas, 1996*). Most notably, Stevens (1994a, p.418) concluded, "When training is transferable, but the skilled labour

market is not perfectly competitive, the private return to the training investment may be less than the social return. Furthermore, information asymmetry between employers and skilled workers may lead to inefficient matching of workers to firms....[T]he nature of this second inefficiency is to increase the probability of the worker leaving the training firm and to exacerbate the difference between the private and social returns".

8. Based on their recent study of service sector employers, Curran et al., (1993) have, however, warned that the often referred to reluctance of small firms to train may as much reflect employees' attitudes as well employers'. Curran et al., whilst not discounting the 'poaching' problem, found small firm employees were also reluctant to participate in training, on the grounds that they did not require more training to do their jobs better.

9. Supporting Abbott (1993), Curran et al., (1993) have suggested that the nature and content of the goods and services provided by a firm can have an impact on the decision to provide training. In some knowledge-based *sectors (Abbott, 1993; Curran et al., 1993)*, in part, due to resource constraints and/or to maximise a firms immediate growth potential (*Wynarczyk et al., 1993*) firms have recruited trained staff (*Curran et al., 1996*) who had received their training in a higher education institute and/or received training during an apprenticeship which enabled them to respond to rapid rates of technological change (*Steedman et al., 1991*).

10. Curran et al., (1996, p.33), however, acknowledged that, "It needs to be noted that TECs may have indirect contacts with small businesses which may result in an underestimation of their importance as providers as training".

11. PA Consultants (1995, p.3) have suggested that TECs have increased the overall demand for business support services (including training) from private sector suppliers.

12. In small firms where the recruitment needs are very specific and focused, owners / managers may prefer to recruit rather than to train existing employees *(Hendry et al., 1991b)*.

13. Begg (1990, p.359) noted skill shortages were more acute in prosperous regions and as a result "...it is difficult to argue a case for regionally differentiated training provision which is biased towards weaker regions".

14. White (1994) found continuing training provision for new technology was not significantly related to business growth (in terms of employees or demand for products and services). A significantly higher level of training for new technology was, however, recorded in businesses where respondents perceived overall competition was increasing, where buyers of their products / services had become more selective with regard to its quality and where the organisation had experienced recruitment difficulties, over the past year, at more than one job level.

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Table 1 Alternative Training Systems

System	Country	Basic characteristics/Issues
Apprenticeship training	Germany, United Kingdom (pre-1980), The Netherlands	Codetermination (employers, unions and government) Coinvestment Certification of skills Incentives for all to do well in school
Low employee turnover and extensive company training	Japan	Lifetime employment lowers turnover Firms provide general and specific training Training embedded in production process High degree of homogeneity in literacy and numeracy
Government-led/school based	Sweden, Norway, United Kingdom (post-1980)	Government-funded general training Government may also fund firm-specific training Relevance of school-based programmes
Employer training tax	France, Australia	Distributes costs over wide range of employers Does not guarantee training of unskilled and those in small firms
School-based/learning-by-doing	United States, Canada	Individual autonomy on training investments Multiple sources of training Few nationally recognised qualifications outside formal schooling Employer training is primarily firm specific

Source: Lynch (1994), Table 2, p.7.

Table 2 **Enterprise-Related Training**

Country	Time period	Individuals receiving formal training (%)
United States	1983	11.8[a]
	1991	16.8[a]
Canada	1985	6.7[b]
West Germany	1989	12.7[b]
Great Britain	1989	14.4[b]
France	1990	32.0[c]
Netherlands	1986	25.0[b]
Sweden	1987	25.4[b]
Japan	1989	36.7[d]
Australia	1989	34.9[e]
Norway	1989	33.1[b]

Notes: a. Received training at any time in current job.
b. Of all employed workers.
c. Of all workers in firms employing 10 or more employees.
d. Received training within the past two years.
e. Received in-house training.

Source: Lynch (1994), Table 4, p.11.

Table 3 **Training Expenditures by Firms**

Country	Time period	Average training expenditure (as % total wage bill)
United States	1988	1.8[a]
Canada	1985	0.9
West Germany	1984	1.8
United Kingdom	1984	1.3
France	1984	1.6
	1989	2.5
Netherlands	1986	1.5
Japan	1989	0.4[b]
Australia (private sector)	1989	1.7

Notes: a. Includes larger firms from *Training Magazine* survey.
b. Training expenditures as a percentage of monthly labour costs, but excludes trainees' wages.

Source: Lynch (1994), Table 5, p.12.

Table 4 **Take-Up of Training by Type of Employee and Firm Size in the West Midlands of England (% of Firms Reporting Training Provided)**

Type of employee / Type of training	Employment Size of the Firm ≤ 9	10-19	20-99	100-199	≥ 200
UNSKILLED					
External	1	3	6	5	4
In-house	3	9	17	28	35
On-the-job	10	26	40	46	54
SEMI-SKILLED					
External	2	9	16	13	13
In-house	3	14	15	35	50
On-the-job	16	29	38	47	58
SKILLED					
External	10	15	29	36	33
In-house	8	13	19	37	56
On-the-job	11	19	29	36	45
CLERICAL					
External	4	19	24	35	37
In-house	9	13	21	39	60
On-the-job	15	20	34	35	39
SUPERVISORY					
External	3	11	23	42	49
In-house	5	10	13	31	61
On-the-job	3	9	16	25	28
MANAGERIAL					
External	14	14	30	50	62
In-house	6	11	15	27	55
On-the-job	9	9	16	20	22

Source: West Midlands Business Survey (1995) discussed in Storey and Westhead (1997).

Table 5 **Explanatory Variables Found to be Significantly Associated with the Provision of Training in Employer-Based Studies**

Author(s)	Explanatory variables significantly associated with the provision of training	Direction of relationship with training provision
1. Goss and Jones (1992)	Provision of training	
	Large employment size (number of employees)	+
2. Elias and Healey (1994)	Provision of some 'type' of job-related formal firms	
	Large employment size (25-99 employees)	+
	Large employment size (100 or more employees)	+
	Independent establishments	-
	Public sector organisations	+
	Main industrial activity - engineering and distribution sectors	-
	Employment growing organisations	+
	Expected recruitment difficulties over the next 3 years	+
	High proportion of employees from ethnic minorities	+
	Unskilled employees	+
	Professional employees	+
	Manager / administrator employees	+
	Operative employees	+
3. Alba-Ramirez (1994)	Provision of formal training	
	Large employment size (log number of employees)	+
	More capital intensive (log value of fixed capital stock per employee)	+
	Foreign company	+
	High proportion of output exported abroad	+
	Practising some form of profit sharing	+
	High proportion of employees being temporary workers	+
	Introduced a new product and / or production process	+
4. White (1994)	Provision of continuing training for new technology	
	Large establishments (500 or more employees)	+
	Firms providing routine services	-
	Perceived increased domestic or international competition	+
	Perceived price pressures	+
	Recruitment difficulties in the past year at more than one job level	+
5. Baldwin and Johnson (1995)	Provision of any training	
	High emphasis the firm placed upon innovation	+
	High emphasis the firm placed upon the quality of the product	+
	High importance placed by the firm on the value of labour skills	+
	Large employment sized firms	+
	High percentage of managers employed in a firm	-
	Firm located in Quebec	-

	Manufacturing firm	-
	Growth in the capital-labour ratio	+
	<u>Provision of formal training</u>	
	High emphasis the firm placed upon innovation	+
	High emphasis the firm placed upon the quality of the product	+
	Large employment sized firm	+
	High percentage of managers employed in the firm	+
	Firm located in Quebec	-
	Manufacturing firm	-
	Growth in the capital-labour ratio	+
	<u>Provision of informal training</u>	
	High emphasis the firm placed upon innovation	+
	High emphasis the firm placed upon the quality of the product relative to competitors	+
	High emphasis placed by the firm on a progressive human-resource strategy with regard to compensation programmes and labour skills, but placing slightly more emphasis on the former	+
	High percentage of managers employed in the firm	-
	Firm located in Quebec	-
	Growth in labour productivity	-
6. Baldwin, Gray and Johnson (1995)	<u>Provision of formal training</u>	
	Plant using two to five technologies	+
	Difficulty in hiring skilled workers	+
	Engaged in R&D	+
	Operated in an innovative industry	+
	Operated in two or more industries	+
	Large enterprise size	+
	Moderate to rapid growth in manufacturing sales	+
	Firm born in the 1970s or more recently	-
	Foreign-owned plant	+
	Firm located in Ontario	-
	Firm located in Prairies	-
	Firm located in British Columbia	-
	<u>Provision of training off the plant floor</u>	
	Plant using two to five technologies	+
	Type of technology-fabrication and assembly	+
	Type of technology-integration and control	+
	Difficulty in hiring skilled workers	-
	Engaged in R&D	-
	Operated in an innovative industry	-
	Modifications undertaken to improve output	-
	Operated in two or more industries	-
	Mid to large establishment size	+
	Mid enterprise size	+
	Large enterprise size	+
	Firm born in the 1970s or more recently	-
	Firm located in Quebec	+
	Firm located in Ontario	-
	Firm located in Prairies	-
	Firm located in British Columbia	-

7. Osterman (1995)	<u>Proportion of CORE employees who received any form of off-the-job training</u>	
	Firms that placed heavy emphasis on hiring employees with previously acquired skills	-
	Jobs with specific skills	-
	Payment of wages higher than other employers in the same area	+
	Firms with more 'humanistic' values	+
	Establishment is part of a large organisation	+
	Presence of a union	+
	Blue-collar jobs	-
	Service jobs	-
	Production process required high levels of skill	+
	Human resource considerations are seen to be important when management is making important decisions regarding long-run competitiveness	+
8. Boreham, Lafferty Roan and Whitehouse (1996)	<u>High score on a training effort index</u>	
	Large workplace size	+
	High innovative management score (based on utilisation of consultative mechanisms)	+
9. Westhead (1997)	<u>Provision of some 'type' of job-related formal training</u>	
	Large employment size (25-99 employees)	+
	Large employment size (100 or more employees)	+
	Young business (1-2 years old)	+
	Young business (3-10 years old)	+
	Established businesses (21-50 years old)	+
	Main industrial activity- construction	-
	Location of the business - North	+
	Location of the business - South West	+
	Participated on a graduate student formal / structured training scheme in 1994	+
	<u>Provision of on-the-job training by superiors</u>	
	Large employment size (100 or more employees)	+
	Established businesses (21-50 years old)	+
	Main industrial activity - construction	-
	Location of the business - South West	+
	Participated on a graduate student formal / structured training scheme in 1994	+
	<u>Provision of full-time courses lasting up to one week</u>	
	Large employment size (25-99 employees)	+
	Large employment size (100 or more employees)	+
	<u>Provision of full-time courses lasting over one week</u>	
	Large employment size (25-99 employees)	+
	Large employment size (100 or more employees)	+
	Main industrial activity - services	+
	<u>Provision of day release courses</u>	
	Large employment size (25-99 employees)	+
	Large employment size (100 or more employees)	+
	Young businesses (1-2 years old)	+
	Business had recorded an absolute employment increase over the past year	+

Provision of other part-time courses	
Participated on a graduate student formal / structured training scheme in 1994	+
Business had recorded an absolute employment increase over the past year	+
Business perceived over the next two years recruitment would present a difficulty	+

Notes: + Positively and significantly associated with the provision of training
- Negatively and significantly associated with the provision of training

Table 6 **Explanatory Variables Found to be Significantly Associated with the Take-Up of Training by Employees from Employee-Based Studies**

Author(s)	Explanatory variables significantly associated with the take-up of training	Direction of the relationship with the take-up of training	
1. Greenhalgh and Stewart (1987)	Take-up of training	Men	Women
	Young employees	+	+
	Non-white	-	-
	Presence of children in the household	-	-
	With qualifications	+	+
	Nursing or teaching qualifications	N.S.	+
	High occupational status	+	-
2. Altonji and Spletzer (1991)	Take-up of training		Total Sample
	Male		-
	White		-
	Post-high school education		+
	High aptitude (particularly in mathematics)		+
	Clerical skill requirements of a job		+
	Intensity of training (hours)		Total Sample
	Male		+
	White		-
	Post-high school education		+
	High aptitude		N.S.
	Clerical skill requirements		-
3. Booth (1991)	Take-up of training	Men	Women
	Young employees	-	-
	Number of months unemployed in the last five years	-	N.S.
	Manual worker	-	-
	City and Guilds Certificate - ordinary and advanced	+	+
	Other technical / business qualifications	+	+
	Private sector firm	-	N.S.
	Represented by a union	+	+
	Large firm (> 25 employees)	+	+
	Location of employer - Scotland	N.S.	-
	Location of employer - London	N.S.	-
	Location of employer - North	N.S.	-
	Employed in agriculture, forestry and fishing	-	N.S.
	Employed in other services	-	N.S.
4. Lynch (1992)	Take-up of company training (on-the-job)		Total Sample
	Male		-
	White		+
	Married		+
	Greater work experience		+
	Individual's job was covered by a union		+
	Live in area of high unemployment		-

	Take-up of training obtained outside the firm (off-the-job)		Total Sample
	Male		-
	Longer tenure on the job (weeks)		-
	High school graduate		-
	Post-high school graduate		-
	Take-up of an apprenticeship		Total Sample
	Male		+
	White		+
	High school graduate		+
	Individual's job was covered by a union		+
	Live in area of high unemployment		+
5. Abbott (1993)	Non-manual employees were more likely to have received most training. Formal training was more common in the professional / managerial and white-collar occupations. Informal training was most common among the skilled and unskilled employees		
6. Green (1993)	Take-up of job-related training (a)	Men	Women
	Young employees	-	N.S.
	Married	N.S.	-
	Dependent children	N.S.	-
	Part-time employee	N.S.	-
	Degree and other higher qualifications	+	+
	At least one GCE 'A' level	+	+
	Large firm (100-199 employees)	+	+
	Employed in the firm for ≥ 6 months	-	-
	Managers and professionals	+	+
	Intermediate non-manual	+	+
	Employed in the energy and water supplies sector	+	N.S.
	Employed in the other services sector	+	N.S.
7. Greenhalgh and Mavrotas (1994)	Take-up of employer based training		Total Sample
	Young people (age 19)		+
	Young people (age 20-21)		+
	Young people (age 22-29)		+
	New recruits < 1 year tenure		+
	Some type of formal qualification ('A' level, degrees and vocational qualifications) (no added value associated with a degree)		+
	Small firm (< 5 employees)		-
	Large firm (500 or more employees)		+
	Trade union member		+
	Professional occupation		+
	Middle income (£8,000 - £10,000)		+
	Low motivation and ambition		-
	"Career aspirations and positive attitudes to training are significant determinants of employer-based training. The fact that individual aspirations are so strongly relevant to training incidence suggests that employers have enough information about their workers to select correctly. To the extent that those who value training the most are given it, this represents an efficient use of resources via a meritocratic selection process by the market" (pp.597-598).		

		Take-up of structured training	Take-up of external training	Take-up of in-house training
8. Miller (1994)	High educational attainment	+	+	+
	High status occupations	N.S.	+	N.S.
	Full-time employees	N.S.	+	+
	Employed on a permanent basis	N.S.	+	+
	Males	N.S.	+	N.S.
	Small firm (1-9 employees)	-	-	-
	Small firm (10-19 employees)	-	-	-
	Small firm (20-99 employees)	-	-	-

9. Veum (1995)	Take-up of company training	Total Sample
	High school graduate	+
	Some college education	+
	College graduate	+
	High individual ability score	+
	High total experience (weeks)	+
	High number of jobs held	+
	Employer > 1,000 employees in size	+
	Union member	+
	High local unemployment rate	-
	Take-up of apprenticeships training	Total Sample
	Males	+
	High school graduate	+
	Some college education	+
	High individual ability score	+
	High number of jobs held	+
	Union member	+
	Take-up of off-the-job training	Total Sample
	High school graduate	+
	Some college education	+
	College graduate	+
	High individual ability score	+
	High number of jobs held	+
	High local unemployment rate	-
10. Blundell, Dearden and Meghir (1996)	Take-up of employer-provided training in 1991	Total Sample
	No qualifications or just CSEs	-
	'A' levels	+
	Professional / intermediate worker first job	+
	Skilled non-manual worker first job	+
	Skilled manual worker first job	-
	Large employer first job	-
	Professional / intermediate worker in 1981	+
	Skilled non-manual worker in 1981	+
	Skilled manual worker in 1981	-
	Large employer in 1981	-
	Public sector employer in 1981	+
	Union member in 1981	+
	Participated on an employer-provided training course in 1981	+
	Made redundant prior to 1989	+

11. Greenhalgh and Mavrotas (1996)	Take-up of training	Working Men	Women
	Young employees (years)	-	-
	Degree qualifications	+	+
	Part-time employee	-	-
	Small firm	-	-
	Self-employed	-	-
	New entrant	+	+
	Professional occupation	+	+
	Technical occupation	+	+
	High R&D spending by employer	+	+
	Job movers	N.S.	+
12. Olsen and Sexton (1996)	Take-up of current training programme	Males	Females
	Previously received general training	+	+
	Previously received specific training	+	+
	High education level (years of schooling)	+	+
	Worked for the government	+	N.S.
	Individual was a supervisor	+	+
	Individual's job was covered by a union contact	+	+
13. Veum (1996)	Take-up of training		Total Sample
	Received more education		+
	High individual ability score		+
	Main industrial activity of employer - finance industry (banking, insurance, real estate)		+
	Main industrial activity of employer - professional services (advertising, computers, consulting)		+

Notes: + Positively and significantly associated with the take-up of training.

\- Negatively and significantly associated with the take-up of training.

N.S. Explanatory variable was not found to be statistically significantly associated with the take-up of training.

(a) With two main exceptions the same factors were found to be associated with the take-up of some on-the-job training or exclusively off-the-job training. Interestingly, for women the estimated probability of receiving off-the-job training increased to a peak at age 35 then it was found to fall off. Second, the employment size of the employer was important and significant only when the training involved on-the-job learning.

Table 7 **Returns to Training in the United States (%)**

Type of training	Firm productivity	Wages
Informal learning-by doing	Rapid increase then flat or falling (Weiss, 1994)	Mimics productivity gains (Weiss, 1994)
Formal training		
Current on-the-job training	17 (Bartel, 1992) 16 (Bishop, 1994)	7 (Lynch, 1991) 11 (Lillard and Tan, 1986) 4.4 (Mincer, 1988) 4.7 (Holzer, 1989)
Previous on-the-job training	9.5 (Bishop, 1994)	0 (Lynch, 1992) 0 (Bishop, 1994)
Previous off-the-job training	—	5 (Lynch, 1992)
Apprenticeship	—	13 (Lynch, 1992; Blanchflower and Lynch, 1994)

Source: Lynch (1994), Table 8, p 22

Table 8 Impacts Associated with the Take-Up of Training

Author(s)	Impacts associated with the take-up of training by employees
EMPLOYEE-BASED STUDIES	
Job Mobility	
1. Lynch (1991)	Young people who had received some company on-the-job training were significantly less likely to leave their employer while those who had participated on some form of off-the-job training obtained from for-profit proprietary institutions outside the firm were markedly more likely to leave. On-the-job training increased the length of time in employment in the first job for women and off-the-job training increased job turnover probability.
2. Elias (1994)	Job-related formal training provided by employers significantly reduced female labour turnover, but not for males (p.576).
3. Elias and Healey (1994)	"An important result which emerges from this analysis is the negative relationship between training and labour mobility. For jobs in which the respondent stated that formal training was received, compared with those for which no training was given, subsequent labour mobility was reduced by about 4% or 5% per annum. This is a reduction in observed mobility rates of approximately of one-third. Informal training was associated with a slight reduction in labour mobility relative to the reference category 'no training was given', but the effect was not statistically significant" (pp.587-588).
4. Greenhalgh and Mavrotas (1996)	"... we find the propensity to move between employers falls with age but rises with qualifications. This confirms that employers who finance training of young well-qualified entrants face some unavoidable losses, while those who hire the trained workers will gain. Those working in small firms are more likely to move between workplace than those in large firms..." (p.13). "Worker mobility is a much more serious problem for private employers than for the non-tradable public sector, where mobility is low" (p.14).
Wages	
1. Booth (1991)	"For both men and women, training incidence has a large and significant impact on earnings, especially so for women. For men, the estimated impact of training incidence is to increase earnings by 11.2 per cent, while for women earnings are increased by 18.1 percent. However, earnings decrease with days of training received" (p.289).
2. Lynch (1992)	Even after controlling for industry and occupation, the various training measures had a positive significant impact on the log of wages in 1983. Periods of off-the-job training and apprenticeships acquired before the current employment raised wages significantly. Weeks of on-the-job training and apprenticeships with the current employer also increased wages (p.307).
3. White (1994)	"...individual initial training in the present job, and increase in training provided for the individual over the past five years, produced significant

gains in earnings" (p.31). Initial training for the job was associated with a differential of 8-10% if obtained by own study or provided by current employer (not past employer). Whilst increased continuing training over the past five years raised earnings by 10%.

4. Arulampalam, Booth and Elias (1995)

"It is striking that only work-related training courses significantly increase wages growth: men experiencing at least one work-related training course have significantly higher expected wages growth of approximately 7%. In contrast, the impact on wages growth of one or more educational courses over this period is insignificant" (p.17).

"... men who have experienced some training event over the sample period are estimated to have had a wage growth which is about 11.4% higher than someone who has had no training at all, ceteris paribus" (p.18).

"Regardless of whether or not a training course provided by the employer is certified, the impact of training is estimated to be positive on the expected wages growth for those who did not change jobs after experiencing the training event and negative for those who did change jobs. A significant 12% increase in expected wages growth is estimated for those men who had stayed on with the employer who had provided them with an uncertified training, certeris paribus. Non-employer provided work-related training events are not estimated to have a significant impact on expected wages growth" (p.20).

5. Veum (1995)

"The estimates show that participation on company training and seminars outside work is positively related to wages. Thus, it appears that whereas the *duration* of training in these programs has no effect on wages, the *incidence* of such training does affect wages" (p.821).

6. Blundell, Deardon and Meghir (1996)

"... the return to doing an off-the-job EPTC... [employer-provided training course] ... with a person's current employer is around 6.6 per cent, compared with 3.6 per cent for an on-the-job EPTC. If this employer-provided training also results in a higher vocational qualification being obtained, then the result is close to 15 per cent for an off-the-job EPTC, compared with 8.5 per cent for a person who has obtained this qualification on non-employer-provided course" (p.54).

7. Olsen and Sexton (1996)

Participation on a training programme had a positive effect on natural logarithm of the hourly wage for 1985 and wage growth over the 1976 to 1985 period for males as well as females.

EMPLOYER-BASED STUDIES

1. Bishop (1994)

"Formal training received on-the-job from a previous employer has no effect on starting wage but increases initial productivity by 9.5 percent of the wage and reduce training requirements by 17.3 percent. It has no effect, however, at the time of the interview.

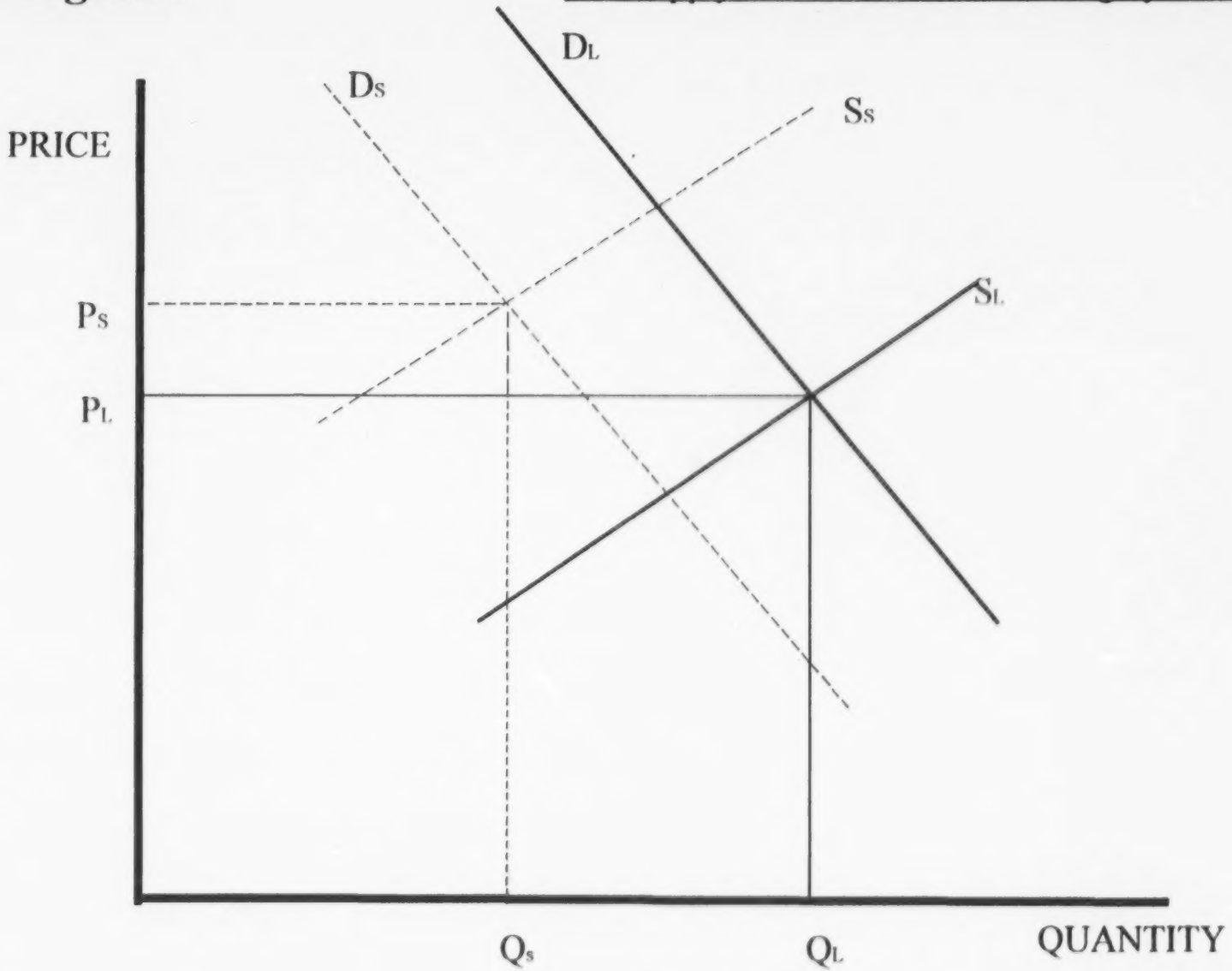
Formal training received off-the-job, on the other hand, has no initial effect on anything, but it increases the index of suggestions by 37 percent and current productivity by 15.9 percent. Formal off-the-job training does not increase current off-the-job wages at six months of tenure and by 18.6 percent of the wage at the time of the interview.

The results suggest OJT sponsored by firm A not only benefits the employee and the employer (as implied by Becker's theory of OJT), but also sometimes benefits other employers in the industry, who hire workers

		who quit or are laid off by firm A. In other words, OJT often creates externalities - benefits that are not appropriated by either the trainer or the trainee. Formal off-the-job training generates substantial long-lasting externalities, and the informal training captured by the relevant experience variable appears to generate externalities only in the first year or so of a worker's tenure at a firm. The market failure that is implied by this finding appears to justify some activity - general OJT in general and off-the-job employer-sponsored training in particular" (pp.185-186). "High productivity and significant reduction in training costs result from hiring employees who have been trained at privately controlled vac/tech schools or colleges. Compared to students who received their vocational training at public institutions, privately trained students are 20 percent more productive initially... and 7 percent more productive at the time of the interview and require 20 percent less training. Their overall productivity net of training costs during the first three months is 22 percent higher" (p.187).
2.	Alba-Ramirez (1994)	Ordinary least-squares regression analysis was utilised to explore the impact formal training had on a firm's output per employee: sales per employee and value added per employee. "The results recorded... show strong support for a positive effect of training on labour productivity, although such an effect takes place only through the proportion of senior employees who received formal training" (p.162). "In fact, the firm's benefit from training is enhanced when training is aimed at the employees who have a greater capacity to learn and are so strategically placed in the company that apply their new skills more effectively" (p.163).

Figure 1

The Supply and Demand for Training by Small Firms



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Appendix 1 **Research Studies Examined Which Focused on Employers**

Author(s)	Focus of the study / sectoral coverage	Sample size	Data source	Survey date	Data collection method(s)	Response rate (a)	Spatial coverage	Statistical methods	Issues studied	Dependent variable(s)
1. Kirby (1990)	Small companies with between 11 and 50 employees. Manufacturing and service sectors	40	Gwent County Councils Gwent Business Directory	1988	Telephone interviews	53%	Gwent, Wales	Descriptive statistics (no statistical testing)	Method of training provision, type of training provider, benefits from training and obstacles to training provision	N.A.
2. Fuller, Murphy and Vickerstaff (1991)	Single and multiple site organisations with one or more employees. All sectors	197	Kent Product Directory and the Post Office List of Main Postal Users	1989	Postal questionnaire	14%	Kent, England	Descriptive statistics (no statistical testing)	Recent training experiences, skills levels of new employees, training policies, organisation of the training effort and awareness of current training initiatives	N.A.
3. Cambridge Small Business Research Centre (1992)	Independent enterprises within the 1 to 500 employment size range. Manufacturing and business services	2,028	Dun and Bradstreet	1991	Postal questionnaire Telephone interviews	33%	National, Great Britain	Descriptive statistics (no statistical testing)	Skills composition of the workforce, industrial sector size and age of employer, current employment pattern and faced recruitment difficulties	Provision of formal training. Type of formal training used. Use of external training. Satisfied with training
4. Goss and Jones (1992)	Independent and subsidiary employers with between 2 and 500 employees. Manufacturing (generally engineering) and service sectors	76	Hampshire County Council Business Directory	1990 1990 1990	Face-to-face questionnaire (23 employers) Postal questionnaire (53 employers) Total sample size (76 employers)	N.S. 27% N.S.	South East Hampshire, England	Spearman's rank, correlation analysis, and chi-square analysis	Employment size of employer and type of organisation structure	Provision of three types of training: restricted; instrumental; and sophisticated training
5. Johnson and Gubbins (1992)	Independent employers with between 5 and 50 employees. Manufacturing and service sectors	50	N.S.	N.S.	Face-to-face interviews	N.S.	North Yorkshire, England	Descriptive statistics (no statistical testing)	Business characteristics, current employment patterns, recruitment over the past year, training of new recruits, training of existing staff and training and business development	N.A.

6. Abbott (1993)	Legally independent small firms with 25 or fewer employees Service sectors (advertising, marketing and design; computer services; employment, secretarial and training agencies; and free houses, restaurants and wine bars)	81	N.S.	1991	Face-to-face interviews	N.S.	Doncaster, Guildford and North East Suffolk, England	Descriptive statistics (no statistical testing)	Size of the firm, industrial activity and occupational category of employees	Provision of four types of training: informal on-the-job training; mixed training strategies; external training only; and formal in-house training
7. Alba-Ramirez (1994)	Large firms with 200 or more employees. Non-agricultural firms	595	Spanish Ministry of Economics and Finance	1989	Postal questionnaire	30%	National, Spain	Multivariate probit regression analysis and tobit analysis	Size of the firm, intensity of capital, technological change, occupational distribution of employees, ownership form, characteristics of labour contracts, workers' commitment and industrial sector	Provision of three types training: job-related formal training; job related training for any junior employees; and job-related training for any senior employees
8. Bishop (1994)	Independent and subsidiary establishments. All sectors	3,412	National Centre for Research in Vocational Education	1982	Telephone interviews	75%	National, USA	Ordinary least-squares regression analysis	Gender, previous relevant experience, total work experience, schooling, vocational education relevant to the job and training received at a private vocational / technical institution that is relevant hire to the job	Log of hours of training received by a new hire; productivity of new hire at the end of the first week; starting wage of new hire and current productivity of new
	Independent businesses. All sectors	2,030	National Federation of Independent Businesses	1987	Postal questionnaire	19%	National, USA	Ordinary least-squares regression analysis	Gender, previous relevant experience, total work experience, schooling, vocational education relevant to the job and training received at a private vocational / technical institution that is relevant hire to the job	Log of hours of training received by a new hire; productivity of new hire at the end of the first week; starting wage of new hire and current productivity of new

9. Elias and Healey (1994)	Independent and subsidiary employers with two or more employees. All sectors	2,028	British Telecom's Connections in Business Database	1990 1990 1990 1990	Face-to-face questionnaire (189 employers) Postal questionnaire (2,594 employers) Telephone questionnaire (210 employers) Total sample size (2,028 employers)	89% 46% 77% 49%	City of Coventry, West Midlands of England	Multivariate logistic regression analysis	Size of the firm, ownership form, industrial activity, occupational and ethnic composition, job market market conditions and expectations of the employers as to future conditions	Provision of job-related formal training binary dependent variable (no = no response or guidance from colleagues when needed (only), yes = planned on-the-job training by superiors, full-time courses lasting up to one week, full-time courses lasting over one week, day release courses and / or other part-time courses)
10. White (1994)	Individuals aged between 20 and 60 years of age were interviewed and asked to give the name and address of their current employers. Establishments of all sizes, and in all branches of both the private and public sector	673	Social Change and Economic Life Initiative (list of individuals used to gather a sample of responses from their employers)	1986	Telephone questionnaire	71%	Aberdeen and Kirkcaldy, Scotland. Coventry, Northampton, Rochdale, and Swindon, England.	Multiple regression analysis	Location and size of the establishment, industrial activity, growth in employees, growth in demand for products and services, perceived competition, perceived price and quality pressures and experienced recruitment difficulties	Provision of continuing training / upskilling for new technology.
11. Baldwin and Johnson (1995)	Firms that had grown in terms of employment and sales over the 1984 to 1988 period. Small and medium -sized firms with less than 500 employees and less than 100 million dollars in assets. All sectors with the exception of public administration	2,157 (904 used in the analysis	Statistics Canada	1992	Postal questionnaire with telephone follow-up	69%	National, Canada	Multivariate probit regression analysis. Ordinary least-squares regression analysis	Employment size of firm, employee turnover rate, employment growing firm, investment in machinery and market development, capital-labour ratio, change in labour productivity, occupational structure location of the firm, importance of research and development, technological complexity, strategies pursued to improve input efficiency and management practices, sources of innovations, attitudes to general quality standards and attitudes towards skilled labour	Incidence of training: three dependent variables any training, formal and informal training. Number of workers trained formally and informally. Expenditure devoted to training of any kind.

12. Baldwin, Gray and Johnson (1995)	Establishments in the manufacturing sector	3,952	Statistics Canada	1989	Survey	94%	National, Canada	Multivariate probit regression analysis	Use of technologies, difficulty hiring skilled workers, engaged in R&D, operate in an innovative industry, operate in two industries, growth in manufacturing sales, age of the firm, foreign-owned firm, establishment size, enterprise size and region of operation	Plant engages in formal training. Plant trains off the plant floor
13. Osterman (1995)	Establishments with 50 or more employees. Non-agricultural industries	875	Dun and Bradstreet	1992	Telephone interviews	66%	National, USA	Tobit analysis	Proportion of female employees, whether most employees had a high school degree, wages above national levels, difficulty to use skills of employees elsewhere, preference to insiders when filling vacancies, skills are the most important hiring factor, union present, ownership form, size of the establishment, the establishment accepts responsibility for personal and family well-being of employees, human resource department involved in major strategic decisions, occupational category of employees, number of innovative work practices introduced in the past five years, average proportion of employees in teams, average proportion of employees in job rotation, average proportion of employees in total quality management, average proportion of employees in quality circles and average proportion of employees in statistical process control	Percentage of CORE employees (the largest group of non-supervisory, non-managerial workers involved in making the product or in providing the service) who received any form of off-the-job training
14. Boreham, Lafferty, Roan and Whitehouse (1996)	Workplaces in the Brisbane area. Accommodation establishments in hospitality and grocery stores in retailing	139	Brisbane telephone directory and Royal Automobile Club of Queensland accommodation directory		Postal questionnaire	40%	Brisbane, Australia	Descriptive statistics. Multiple regression analysis	Workplace size, managers impressions of profitability, innovative management and numerical flexibility	Training effort index

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15. Curran, Blackburn, Kitching and North (1996)	Owner-managed firms employing 1 to 199 people in manufacturing, services and construction	751	Dun and Bradstreet	1995	Telephone interviews	78%	National, UK	Descriptive statistics (no statistical testing)	Employer approaches to worker training, types of training, sources of training provision and the importance of formal qualifications and barriers to increases in levels of training	Importance of informal training. The role of external sources of training
16. Matlay (1996)	Owner-managed small businesses employing 1 to 199 people. All sectors	2,000	Yellow Pages Telephone Directory	1993	Telephone interviews Face-to-face interviews	N.S.	West Midlands, England	Descriptive statistics (no statistical testing)	Attitudes to training and actual provision of training	Provision of training
17. Amos, Spiller Storey and Wade (1997)	Middle market companies with annual sales turnover between £8 and 500 million	308	Firms previously interviewed by Coopers & Lybrand. One Source data base	1994/5	Telephone interviews	N.S.	National, UK	Multivariate ordinary least-squares regression analysis	Education, training and development scores	Intermediate outcomes (average new product / service lead time, customer complaints, quality of raw material defects level, productivity change, average delivery lead time, orders delivered on time, absenteeism and staff turnover); final outcomes (return on sales, return on capital employed, cash flow and average cost per unit) and objective outcomes (profits 1992-4, profits / turnover 1992-4, percentage change in turnover 1992-4 and (sector normalised) return on capital employed 1992-4)
18. Westhead (1997)	Independent and subsidiary employers. All sectors	909	Shell UK Ltd	1994	Postal questionnaire	58%	National, UK	Multivariate logistic regression analysis	Age and size of the business, ownership form, industrial activity, location of the business, current employment pattern, participation on a graduate training scheme and the perception of future recruitment difficulties	Some type of job-related formal training. Planned on-the-job training by superiors. Full-time courses lasting up to one week. Full-time courses lasting over one week. Day release courses. Other part-time courses.
		160	Dun and Bradstreet	1994	Postal questionnaire	N.A.	National, UK			
		244	Shell UK Ltd	1995	Postal questionnaire	69%	National, UK			
		84	Dun and Bradstreet	1995	Postal questionnaire	53%	National, UK			

Notes: (a) A high response rate to a survey does not necessarily suggest than an unbiased and representative sample of respondents has been collected. The quality of each study should also be assessed with regard to wider sampling issues including identification of all known members of the population, all members of the population have been allowed to be included in the survey frame, whether some control was placed upon who responded to the questionnaire, response bias to the survey was measured and minimised, etc. (de Vaus, 1991).

N.S. Not specified in the published article.

N.A. Not applicable

Appendix 2 **Research Studies Examined Which Focused on Individuals / Employees**

Author(s)	Focus of the study	Sample size	Data source	Survey date	Data collection method(s)	Response rate (a)	Spatial coverage	Statistical methods	Issues studied	Dependent variable(s)
1. Greenhalgh and Stewart (1987)	Men and women who had entered the labour market	1,760 (M)	National Training Survey	1975	Labour force survey	N.S.	National, Great Britain	Multivariate logistic regression analysis	Age, gender, non-white ethnic background, marital status, dependent children, qualifications, occupational status and level of earnings	Take-up of vocational training
		1,761 (F)	National Training Survey	1975	Labour force survey	N.S.	National, Great Britain			
		941 (SF)	National Training Survey	1975	Labour force Survey	N.S.	National, Great Britain			
2. Altonji and Spletzer (1991)	Men and women who were high school seniors during the 1971-72 academic year. Sub sample analysis of 3,181 respondents	22,652	Department of Education National Longitudinal Survey	1986	Departme ' of Education Longitudinal Survey	N.S.	National, USA	Multivariate probit regression analysis; ordinary least squares regression analysis	Gender, race, education level, mathematical and verbal aptitude, high school class rank, high school curriculum, occupation and occupational characteristics	Take-up of five types of training: whether the individual received or participated in employer-provided training or training programmes on the current or last job; employer-provided training during working hours on the work premises; informal on-the-job training; employer-provided education or training during working hours of the work premises; and tuition and financial assistance for after-working hours education. The intensity of training for the five selected types of training were measured by the number of hours of training per week

3. Booth (1991)	Employees of all age groups	1,365	British Social Attitudes Survey	1987	Labour force survey	N.S.	National, UK	Multivariate logistic regression analysis; ordinary least-squares regression analysis	Age, gender, non-white ethnic background, marital status, dependent children, level of education, qualifications, training experience, industry of employer, size of employer, location of employer, manual worker, member of a trade union and level of earnings	Take-up of formal job-related vocational training. Number of days of training over the past two years
4. Lynch (1991)	Males and females who were 14 to 21 years of age at the end of 1978. Sub-sample analysis of 3,064 respondents	12,686	National Longitudinal Survey	1985	Labour force survey	N.S.	National, USA	Cox proportional hazard analysis	Gender, race, marital status, being disabled, school level, college graduate, job covered by union collective agreement, located in an urban area, local unemployment rate, previously received company on-the-job training, previously received off-the-job training and previously received apprenticeship training	Job mobility
5. Lynch (1992)	Males and females who were 14 to 21 years of age at the end of 1978. Sub-sample analysis of 3,064 respondents	12,686	National Longitudinal Survey	1985	Labour force survey	90%	National, USA	Multivariate probit regression analysis; ordinary least-squares regression analysis	Gender, race, marital status, school level, college graduate, tenure period (weeks), total experience (weeks), number of jobs, job covered by a union collective agreement, local unemployment rate, previously received company on-the-job training, previously received off-the-job training and previously received an apprenticeship training	Take-up of three types of training: company training (on-the-job training), apprenticeships and training obtained outside the firm (off-the-job training) from business courses, barber and beauty schools, nursing programmes, vocational and technical institutes and correspondence courses. Log of wages in 1983
6. Abbot (1993)	Employees of small service firms in four industrial sectors with 25 or fewer employees	175	N.S.	1991	Face-to-face interviews	N.S.	Doncaster, Guildford, and North East Suffolk, England	Descriptive statistics (no statistical testing)	Type of informal and / or formal training received, industrial sector of employer and occupational status	Take-up of three types of training: informal on-the-job training; mixed training; and formal training

7. Green (1993)	Male and female employees aged 16 to 59 years of age	7,969	General Household Survey	1987	General household survey	N.S.	National, UK	Multivariate logistic regression analysis; multinominal logistic regression analysis; ordered probit regression analysis	Age, gender, marital status, dependent children, qualifications, part-time employee, public sector employee, job tenure, occupation and size of employer	Take-up of three types of training: any job-related training; on-the-job training ('learning by practice and example while actually doing the job'); and exclusively off-the job training. Length of training
8. Elias (1994)	Employees aged between 20 and 60 years of age	1,000	N.S.	N.S.	N.S.	N.S.	Rochdale, England	Multivariate logistic regression analysis	Age of respondent, industrial and occupational characteristics of the sector in which the respondent worked, employment size of employer, tenure period with employer, member of a trade union and whether formal training had been provided by an employer	Job mobility
9. Elias and Healey (1994)	Residents between 20 and 60 years of age	7,652	Electoral register	1990	Face-to-face questionnaire	70%	City of Coventry, West Midlands of England	Multivariate logistic regression analysis	Age of respondent, industrial and occupational characteristics of the sector in which the respondent worked, type of work performed, employment size of employer, tenure period with employer and whether the respondent had received informal and / or formal training when starting each new job	Job mobility
10. Greenhalgh and Mavrortas (1994)	Working and unemployed persons who had left school for at least 3 years	2,113	Labour force survey	1987	Labour force survey	N.S.	National, UK	Multivariate logistic regression analysis	Gender, age, marital and parental status, qualifications, trade union affiliation, part-time worker, firm size, job tenure, occupation, industrial sector, financial position and attitudes to self-improvement and career	Take-up of five types of training: any training in the last 3 years; employer arranged or funded training; employer-based training > 3 days; non-employer training > 3 days

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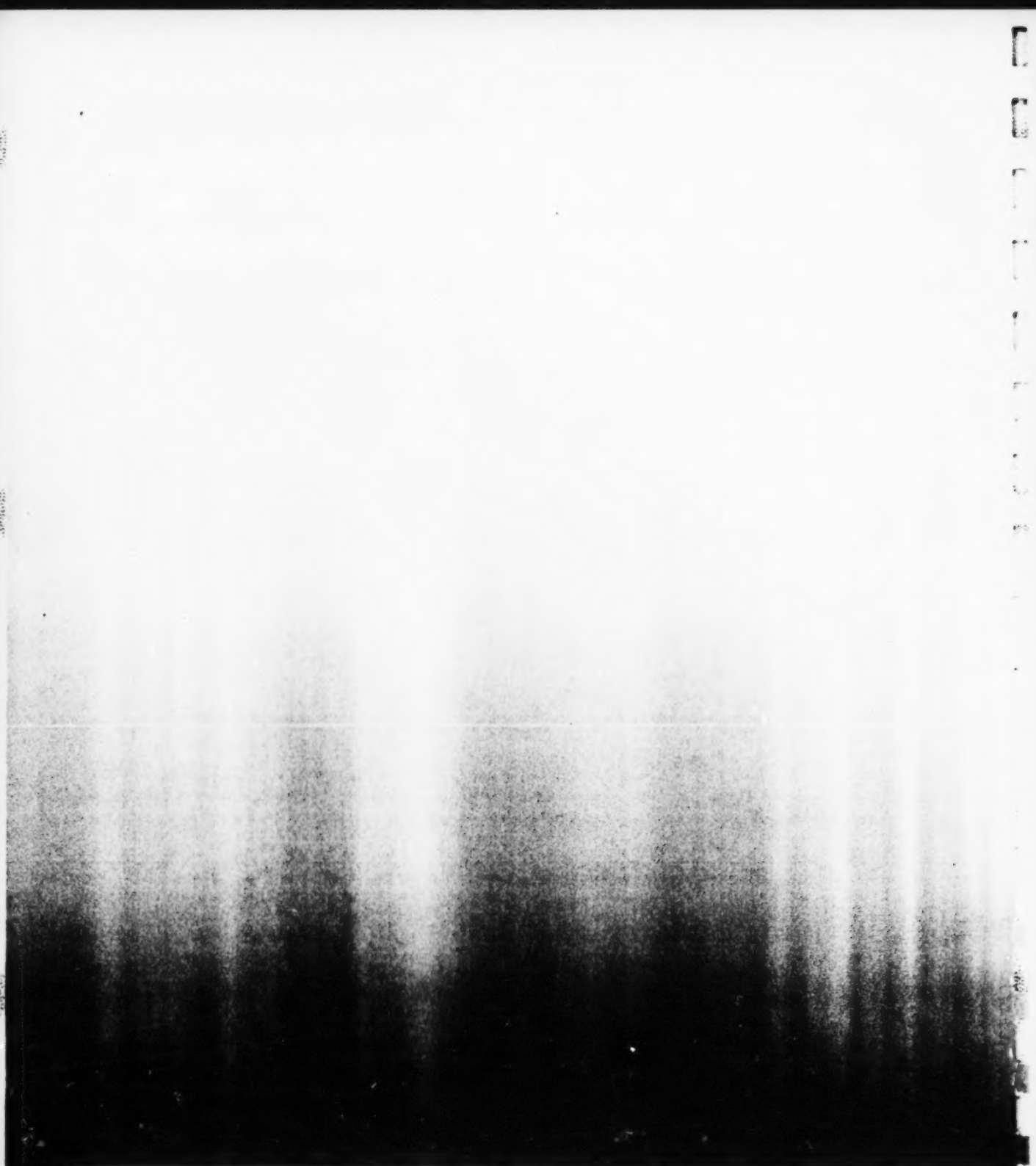
11. Miller (1994)	Men and women aged between 15 and 64 years of age who had a wage or salary job in the last 12 months	6,614 (M) 5,271 (F)	Australian Bureau of Statistics	1989 1989	Labour force surveys	N.S.	National, Australia	Multi-nominal logit analysis, binary logit analysis and ordinary least-squares regression analysis	Birthplace, gender, age, marital status, qualifications, age of youngest child, tenure, occupational experience, occupation, industry, sector of employment, casual employee, firm size and hours worked	Incidence of external training. Incidence of unstructured training. Hours of training
12. Weiss (1994)	Men and women hired at three facilities of a large telecommunications manufacturer	2,000	Large telecomm-unications manufacturer	1980	Labour force survey	N.S.	Three locations, USA	Descriptive statistics (no statistical testing)	Period of sorting and learning (months)	Change in hourly output
13. White (1994)	Individuals aged between 20 and 60 years of age. Employed in establishments with 20 or more employees. Individuals provided names and addresses of their current employers. Telephone interviews conducted with 637 establishments	1,642	Social Change and Economic Life Initiative	1986	Labour force Survey	75%	Aberdeen and Kirkcaldy, Scotland, Coventry Northampton Rochdale and Swindon, England	Multiple regression analysis	Gender, qualifications, number of months in employment, tenure with current employer, previous initial training by another employer, previous initial training by current employer and a continuing training measure over the last five years. Organisational characteristics of employer - size of the establishment, industrial activity, rate of adopted technical change, union representation, perceived competition, perceived price and quality pressures, and experienced recruitment difficulties	Log of net hourly earnings. Scale of occupational attainment / desirability

14. Arulampalam, Booth and Elias (1995)	Thirty-three year old men all born in the week of 3-9 March 1958 and living in Britain. All immigrants arriving in Britain in the period 1958-74 and born in the week 3-9 March 1958 were added to the survey frame. Young men who were in employment in 1981 and 1991.	1,025	National Child Development Study	1981 1991	Labour force surveys	N.S.	National, Great Britain	Bivariate probit regression analysis	Socio-economic background of the individual's father, measures of individual performance in standard ability tests taken at 11 years of age, ethnic background, highest educational qualification achieved by individual by the 1981 survey date, type of secondary school attended, marital status, number of children region of residence, whether the individual had a disability which affected the type of work he normally did, type of job he usually did, union membership, attributes of the firm where the individual was employed in 1981 and 1991 (i.e., employment size and whether or not the firm was in the private sector), the regional unemployment rate, type of training received prior to 1981, type of education and training received over the period 1981-1991 and the time elapsed since most recent training course ended	Change in usual gross hourly earnings from employment received at the survey dates of 1981 and 1991, deflated to a common point in time using the Consumer Price Index
15. Veum (1995)	Men and women who were between the ages of 14 and 22 in 1979 and who had been interviewed annually since 1979. Aged between 20-35 in 1990	4,614	National Longitudinal Survey of Youth	1990	Labour force survey	N.S.	National, USA	Multivariate probit regression analysis; ordinary least-squares regression analysis	Gender, non-white ethnic background, marital status, level of education, ability score, job tenure, number of jobs held, large firm employer, member of a trade union, local unemployment rate, live in an urban area and health status	Take-up of eight types of training: company training; apprenticeships; off-the-job training; business school off-the-job training; vocational/ technical institute off-the-job training; correspondence course off-the-job training; seminar outside work off-the-job training; and 'other' off-the-job training. Log wages in 1990 on hours of training received between 1986 and 1990. Change in log wages between 1986 and 1990.

16. Blundell, Dearden and Meghir (1996)	Persons living in Great Britain who were born between 3 and 9 March 1958. Individuals who were employees in both the public and private sectors in 1981 (when they were aged 23). Any individuals who were in full-time education in 1991, who had become self-employed in 1991 or had participated in government training over the 10-year period between 1981 and 1991 were excluded	1,735 (M) 1,661 (F)	British National Child Development Survey	1991 1991	Labour force survey	N.S.	National, Great Britain	Multivariate probit regression analysis; ordinary least- squares regression analysis	Gender, age when started first job, highest school qualification, highest post-school qualification (1981), undertaken interest course since 1981, log real weekly wage first job, private sector employer first job, large employer first job, social class first job, private sector employer in 1981, large employer in 1981, social class in 1981, union member in 1981, made redundant prior to 1989, only had one job, participated on work-related courses first job and participated on work-related courses in 1981	Take-up of employer-provided training courses. Take-up of training courses (employer or non-employer provided) that led to a recognised vocational qualification. Probability of being employed in 1991. Log real hourly wage in 1981. Log real hourly wage in 1991.
17. Greenhalgh and Mavrortas (1996)	Working men and women aged between 16 and 59 who were employed or self-employed at the time of the surveys in 1984 and 1989	36,554 (M) 38,623 (M) 26,918 (F) 31,178 (F)	Labour force surveys	1984 1989 1984 1989	Labour force surveys	N.S.	National, UK	Multivariate logistic regression analysis	Age of respondent, qualifications, industrial and occupational characteristics of the sector worked in, employed in a small firm, self-employed, part-time employee, level of R&D spending in the firm and moved jobs and /or new entrant	Take-up of training. Job mobility
18. Olsen and Sexton (1996)	White male household heads and white females who were either household heads or wives of the female sample	1,664 (M) 1,331 (F)	Michigan Panel Study of Income Dynamics	1985	Household survey	N.S.	Michigan, USA	Tobit analysis; ordinary least-squares regression analysis	Job experience acquired in the worker's current firm prior to their present position; job experience acquired in previous firms since the age of 18; years of school; employed by the government; employed as a supervisor; and the individual's job was covered by a union contract	Take-up of current training. Current hourly wage. Hourly wage growth
19. Veum (1996)	Men and women aged 21-29 years in 1986 to 26-34 years in 1991	4,826	National Longitudinal Survey of Youth	1991	Labour force survey	N.S.	National, USA	Multivariate probit regression analysis	Gender, race, marital status, ability score, qualifications, trade union affiliation, occupation, industrial sector and local unemployment level	Training receipt. Number of training events. Total hours spent in training. Hours of training per hours worked

Notes: (a) A high response rate to a survey does not necessarily suggest than an unbiased and representative sample of respondents has been collected. The quality of each study should also be assessed with regard to wider sampling issues including identification of all known members of the population, all members of the population have been allowed to be included in the survey frame, response bias to the survey was measured and minimised, etc. (de Vaus, 1991).

N.S. Not specified in the published article; (F) Females; (M) Males; (SF) Single females.



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